86th YEAR

AMERICAN GAS JOURNAL

AUGUST 1944

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AUG 2 1944

Today's Fighters Use Tomorrow's Oven Heat Controls

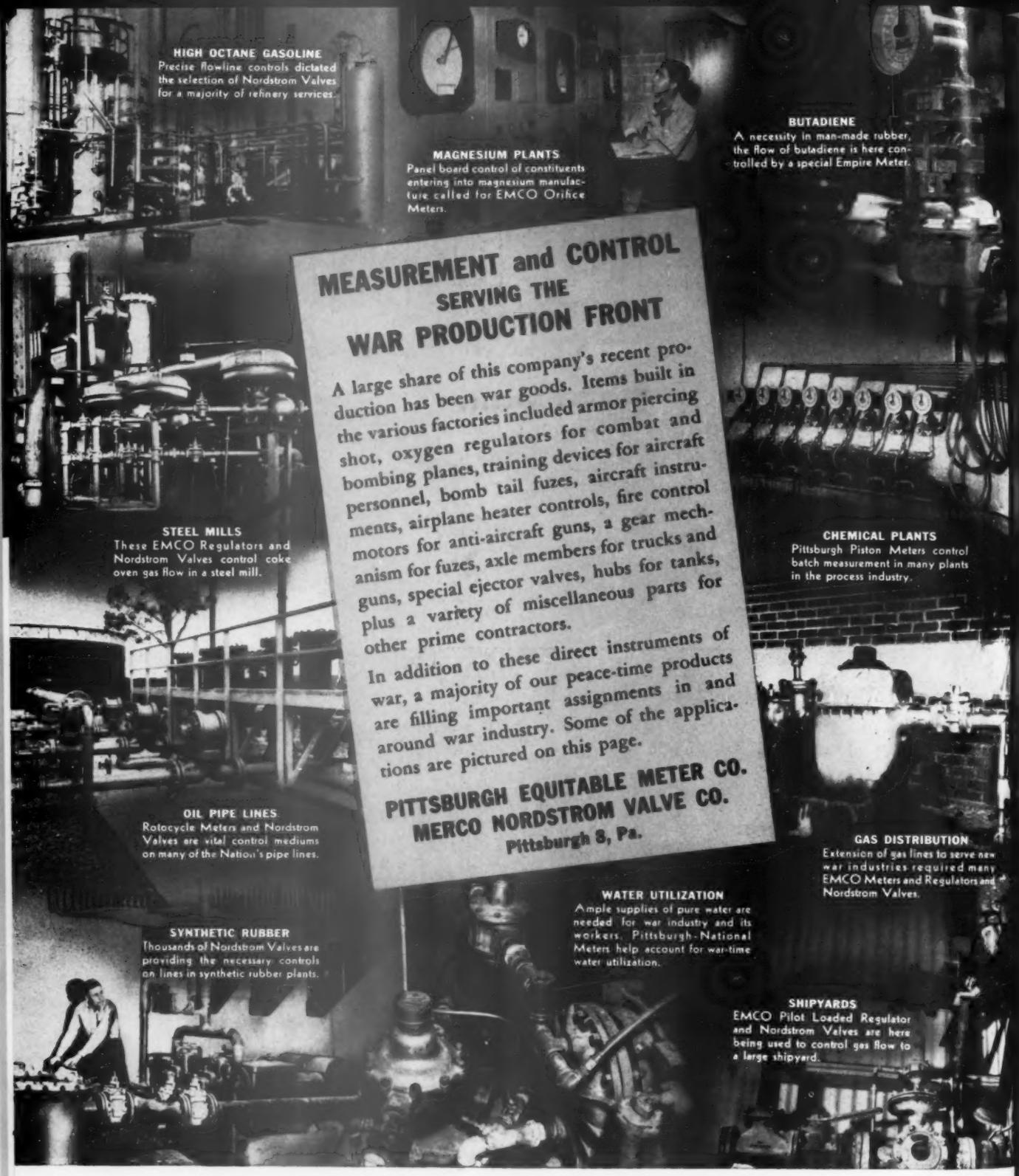
Today pilots of the swift and deadly P-51 Mustangs use a new kind of heat control—engineered, designed and manufactured by Robertshaw. Called an Actuator, this precision instrument controls engine operating temperature automatically. Robertshaw Actuators have nearly 500 parts, many built to tolerances ranging from .0001 to .0004 ins.

Tomorrow the skill and experience gained in the development of these Actuators will mean still better Robertshaw Oven Heat Controls. So tomorrow, more than ever, a Robertshaw Oven Heat Control will be a fuel and food saving plus which homemakers will be looking for on the ranges they buy.

Women's Interest Radio Programs Are Telling Homemakers About Robertshaw Oven Heat Controls

Robertshaw

ROBERTSHAW THERMOSTAT COMPANY • YOUNGWOOD, PENNSYLVANIA



HIGH OCTANE GASOLINE
Precise flowline controls dictated the selection of Nordstrom Valves for a majority of refinery services.

MAGNESIUM PLANTS
Panel board control of constituents entering into magnesium manufacture called for EMCO Orifice Meters.

BUTADIENE
A necessity in man-made rubber, the flow of butadiene is here controlled by a special Empire Meter.

MEASUREMENT and CONTROL SERVING THE WAR PRODUCTION FRONT

A large share of this company's recent production has been war goods. Items built in the various factories included armor piercing shot, oxygen regulators for combat and bombing planes, training devices for aircraft personnel, bomb tail fuzes, aircraft instruments, airplane heater controls, fire control motors for anti-aircraft guns, a gear mechanism for fuzes, axle members for trucks and guns, special ejector valves, hubs for tanks, plus a variety of miscellaneous parts for other prime contractors.

In addition to these direct instruments of war, a majority of our peace-time products are filling important assignments in and around war industry. Some of the applications are pictured on this page.

PITTSBURGH EQUITABLE METER CO.
MERCO NORDSTROM VALVE CO.
Pittsburgh 8, Pa.

STEEL MILLS
These EMCO Regulators and Nordstrom Valves control coke oven gas flow in a steel mill.

CHEMICAL PLANTS
Pittsburgh Piston Meters control batch measurement in many plants in the process industry.

OIL PIPE LINES
Rotocycle Meters and Nordstrom Valves are vital control mediums on many of the Nation's pipe lines.

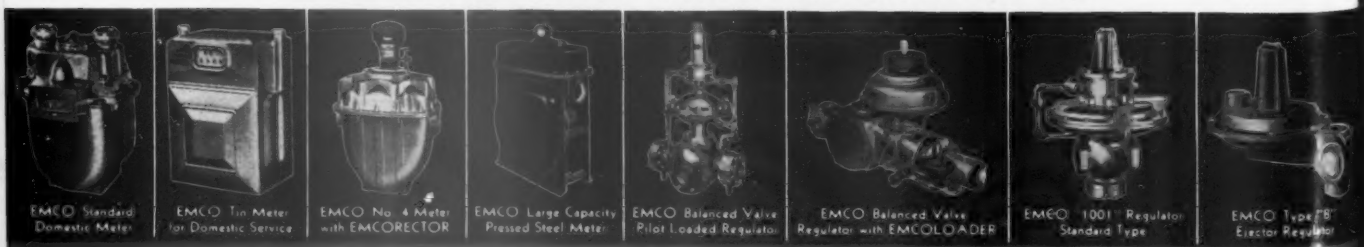
GAS DISTRIBUTION
Extension of gas lines to serve new war industries required many EMCO Meters and Regulators and Nordstrom Valves.

SYNTHETIC RUBBER
Thousands of Nordstrom Valves are providing the necessary controls on lines in synthetic rubber plants.

WATER UTILIZATION
Ample supplies of pure water are needed for war industry and its workers. Pittsburgh-National Meters help account for war-time water utilization.

SHIPYARDS
EMCO Pilot Loaded Regulator and Nordstrom Valves are here being used to control gas flow to a large shipyard.

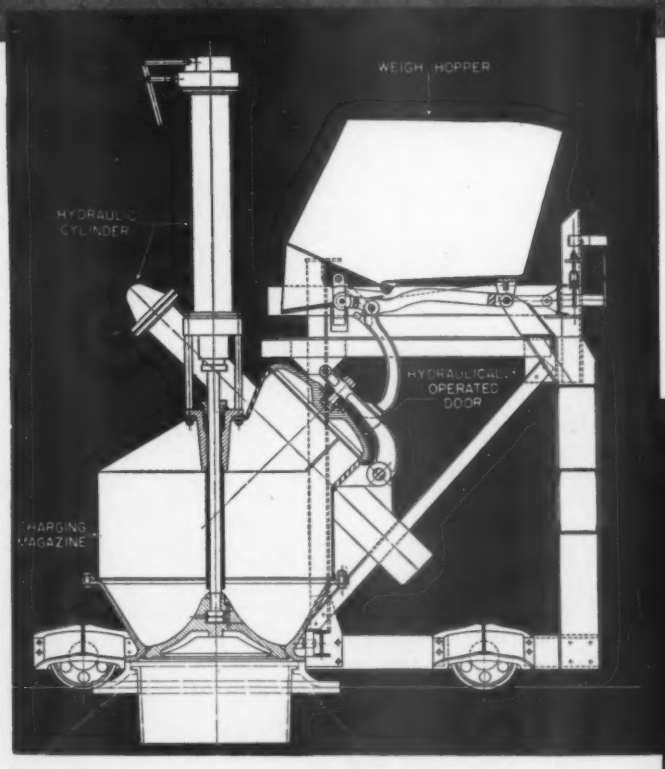
EMCO METERS AND REGULATORS



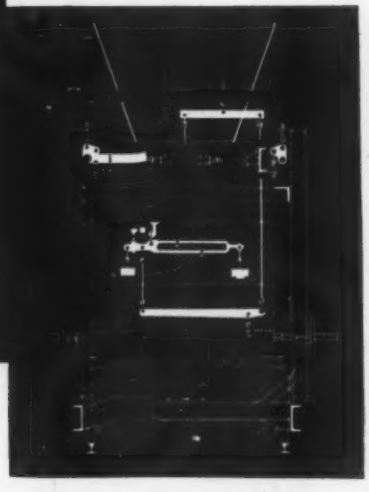
EMCO Standard Domestic Meter | EMCO Tin Meter for Domestic Service | EMCO No. 4 Meter with EMCORECTOR | EMCO Large Capacity Pressed Steel Meter | EMCO Balanced Valve Pilot Loaded Regulator | EMCO Balanced Valve Regulator with EMCOLOADER | EMCO 1001 Regulator Standard Type | EMCO Type "B" Ejector Regulator

For Accurate Gas Measurement and Control

SEMET-SOLVAY *Automatic* CHARGING MACHINE



INCREASES CAPACITY *Saves Labor*



At least ten per cent increase in capacity of your water gas machine can be obtained by the addition of a Semet-Solvay Automatic Charging Machine. Part of the increase is obtained by eliminating shut-downs for charging, part from the added efficiency of a fuel bed of constant depth.

The charger refuels the generator once every cycle during the back-run period. Fuel is accurately weighed by a built-in scale and is uniformly distributed by a hydraulically-controlled spreader. A clamping device gives a gas-tight closure between charger and generator. Seating of the doors is cushioned by the hydraulic cylinders.

The Semet-Solvay Automatic Charging Machine is built for use with any make of water gas or blue gas machine. Automatic charging is not recommended however when the fuel used is bituminous coal. If you operate on coke or anthracite coal, why not write us for further information and a list of satisfied users.

SEMET-SOLVAY ENGINEERING CORPORATION

40 Rector Street New York, N. Y.

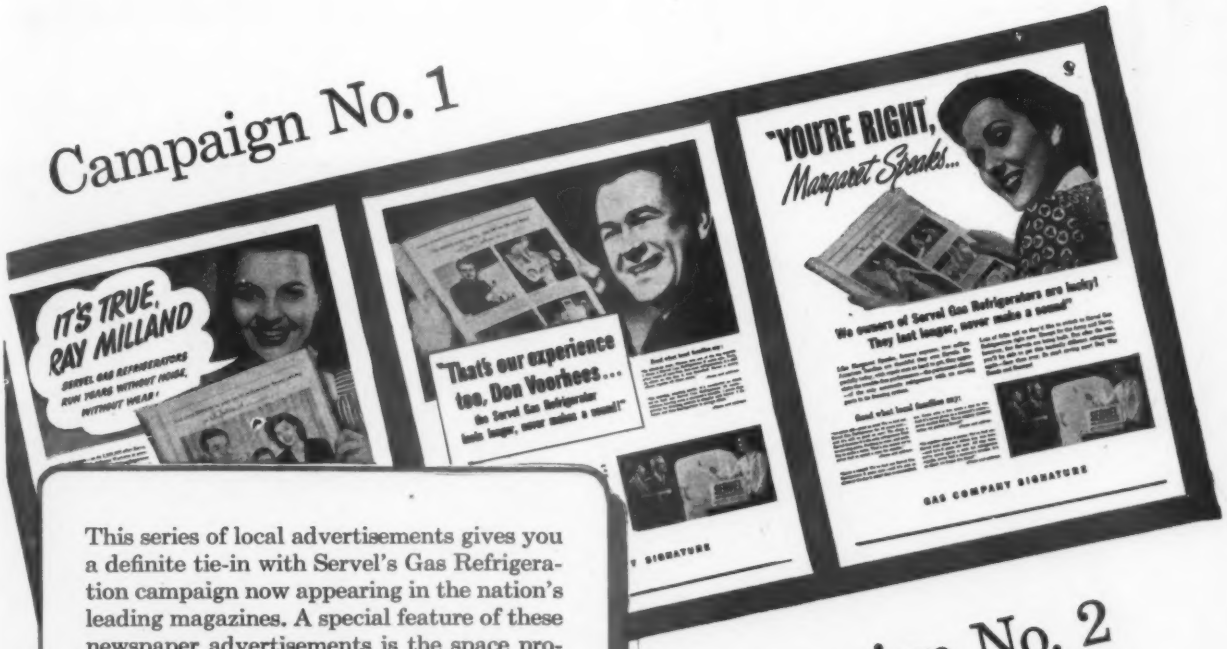
AMERICAN GAS JOURNAL, August, 1944. Vol. 161, No. 2. Published monthly by American Gas Journal, Inc., at 34 North Crystal St., East Stroudsburg, Pa. Executive and Editorial offices at 53 Park Place, New York 7, N. Y. Entered as second-class matter, October 7, 1928, at the post office at East Stroudsburg, Pa., under the Act of March 3, 1879. Printed in U. S. A.

AUG 24 1944

2 SUGGESTED NEWSPAPER CAMPAIGNS

to help you build post-war Gas Refrigeration Sales

Campaign No. 1


IT'S TRUE, RAY MILLAND
SERVEL GAS REFRIGERATORS RUN YEARS WITHOUT NOISE, WITHOUT WEAR!
"That's our experience too, Don Voorhees..."
"YOU'RE RIGHT, Margaret Speaks..."
We owners of Servel Gas Refrigerators are lucky! They last longer, never make a sound!"
GAS COMPANY SIGNATURE

This series of local advertisements gives you a definite tie-in with Servel's Gas Refrigeration campaign now appearing in the nation's leading magazines. A special feature of these newspaper advertisements is the space provided for you to insert statements of your own customers. Experience has shown that enthusiastic Servel owners are generally willing to let you quote them.

Campaign No. 2

"As silent as the day we bought it!" says local housewife
"Servel Gas Refrigerator lasts for years..."
GAS COMPANY SIGNATURE
"LUCKY WE PICKED A SERVEL, IT NEVER NEEDS FIXING!" says local housewife
SERVEL
"No Noise! No Wear!"

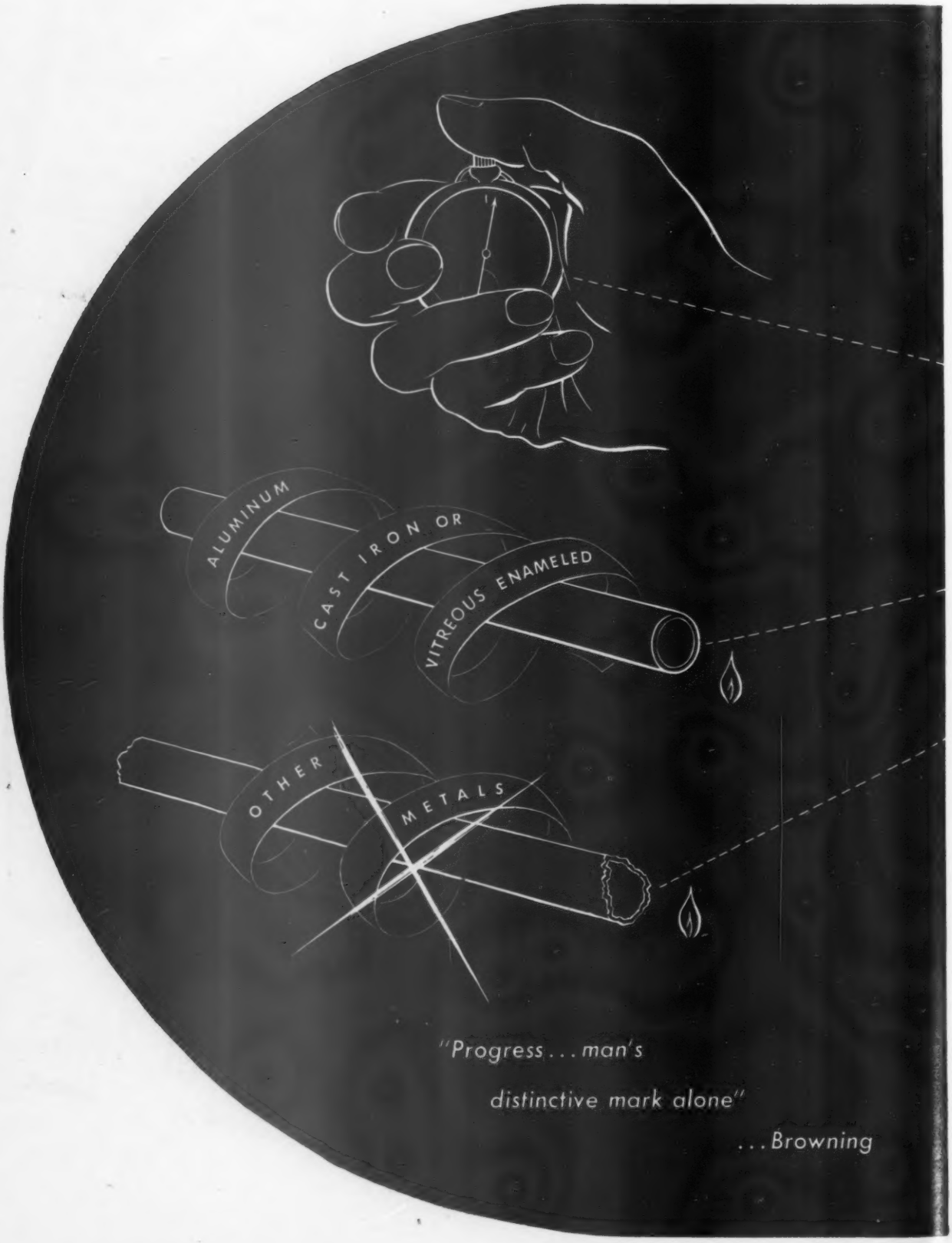
These advertisements put an even stronger stress on local customer statements. They are bound to get good readership, because most people like to read about their own townspeople—even if they do not know them personally. All you have to do is replace the small stock pictures with pictures of your customers . . . and replace the sample statements with those of your customers.

AVAILABLE IN THREE SIZES. The advertisements in both of these suggested newspaper campaigns are available in mat form in the following sizes: 6 columns by 16 inches; 5 columns by 13½ inches; and 4 columns by 11 inches.

Send for these mats today. You'll find them an effective way to promote Gas Refrigeration—dramatize Gas and Gas Service in your community. Write, too, for Servel's new booklet, "Getting Ready for the Post-War Market with Gas Refrigeration Now," if you have not already received your copy. Address Servel, Inc., Advertising and Sales Promotion Department, Evansville 20, Indiana.

Servel, Inc.
Evansville 20 Indiana

What will the gas range of the future



be like...and WHY?

DISCUSSION NO. 6

What importance do you attach to top burner flash tubes?

Actually, top burner flash tubes are as important to top burner ignition as the carburetor is to the gas engine.

Being the most important link in dependable top burner ignition, flash tubes must be made of the most corrosive resistant metals and be properly designed in the top burner assembly so that they will always give split-second lighting.

We predict that flash tubes will be made of aluminum, cast iron or vitreous enameled metal because these are highly resistant to the corrosive action of certain gases. Sulphur in gas, for example, plays havoc by eating away parts of tubes made from certain other materials. Result: poor ignition, making service calls and repair work necessary.

Flash tubes must be properly aligned to both pilot and burner. They must be arranged so that cleaning or removing burners in actual home use will not disturb them from their proper positions. They must also be designed to prevent clogging from spillovers.

Each part of the post war gas range must be so constructed that it will carry on its proper function for the life of the range. Replacement of weak parts is expensive to both stove builder and the gas utility—not to mention the irritation of the gas range owner, who may begin to doubt that she is really using the ideal cooking fuel.

HARPER-WYMAN COMPANY

8562 VINCENNES AVENUE
CHICAGO 20, ILLINOIS

ARMY E NAVY

NOTE: Upon request we shall be glad to send you reprints o. preceding advertisements in this series, discussing burner heads, arrangement of top burners, the correct burner for each gas, the advantages of a pilot lighter for each two burners, and gas filters.

HARPER BURNER SYSTEM

2-burners-in-1

25 Feet in the Air...25 psi. and Still Bottle-Tight with...

DRESSER Bellmaster Joints

Gruelling tests by Dresser engineers and by users have proved the remarkable performance of the new Style 85 Dresser Bellmaster Joints for cast-iron pipe. Above, five lengths of pipe, joined with Bellmasters, tested tight at 25 lbs. air pressure and held tight at 25′ elevation.

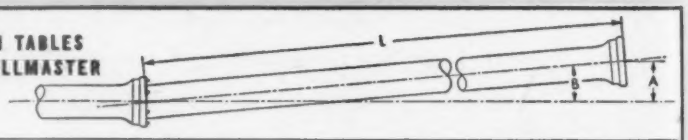
What does this flexibility and tightness mean? Lines may be joined and lowered from above ditch—trench irregularities are taken up by deflection at the joint—curves may be made with straight lengths of pipe—stresses and strains are absorbed—lines remain tight under virtually any operating conditions.

The Bellmaster is both light and strong. Completely factory-assembled, it is installed in 2 to 5 minutes or less. It fits within the bell, safe from corrosion. Investigate the Dresser Bellmaster . . . Compare costs. For here is the greatest development made in cast-iron pipe joining in over 100 years.

Catalog 441A on request.

Vibration does not harm this Bellmaster line under tracks.

DEFLECTION TABLES
DRESSER BELLMASTER
STYLE 85



Size	Maximum Safe Deflection			Permissible Deflection for Joint Assembly		
	Angle B	Distance A		Angle B	Distance A	
		L = 16′	L = 18′		L = 16′	L = 18′
3″	9° 0′	30⅜″	34⅛″	5° 30′	18½″	20¾″
4″	8° 30′	28⅝″	32¼″	5° 10′	17⅜″	19½″
6″	8° 0′	26⅞″	30¼″	5° 0′	16⅞″	18⅞″
8″	7° 0′	23⅝″	26½″	5° 0′	16⅞″	18⅞″
10″	6° 30′	21⅞″	24½″	4° 30′	15⅛″	17″
12″	6° 0′	20¼″	22¾″	4° 30′	15⅛″	17″
16″	5° 0′	16⅞″	18⅞″	4° 0′	13½″	15⅛″

Bellmaster ability to realize deflection cuts down installation and maintenance costs.

DRESSER MANUFACTURING COMPANY • BRADFORD, PA.

ONE OF THE DRESSER INDUSTRIES

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A. I. PHILLIPS, *Consulting Editor*

H. T. MATTHEW, *Business Manager*

JAMES C. MUNN, *Midwest Representative*
10515 Wilbur Ave., Cleveland 6, Ohio
Tel. Sweetbrier 0052

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Four batteries (a total of forty-eight) Reliance pressure regulators on flotation process.

All-American teamwork of measurement and control in BUTADIENE making....

THE PRESSING importance of butadiene for synthetic rubber production imposes a critical responsibility upon accuracy and ruggedness in measurement and control.

In their selection for this plant of a major gas company, Westcott-American orifice meters and Reliance pressure regulators demonstrate once again the confidence which their records of exacting performance have earned.

The simplicity of Westcott-American orifice meters and Metric-American flow controllers, which is basic in AMERICAN design, makes possible easier inspection and adjustment without interfering with any of the few operating parts.

These features assure low maintenance cost, which now takes on greater importance than ever before due to the shortage of experienced maintenance crews.

Westcott-American master orifice meters and three eight-inch-spring-loaded Reliance regulators controlling high-pressure gases.

2200

AUGUST 1944

AMERICAN GAS JOURNAL

VOLUME 161 NO. 2

In the Wake of a Cyclone*

DISASTER to Bridgeport compressing station of the Hope Natural Gas Company rode the wings of the freak cyclone which exacted a terrible toll of 100 lives and injured hundreds when it ravaged northern West Virginia in the late evening of Friday, June 23rd.

Located midway between Bridgeport and Boothsville, or about ten miles northeast of Clarksburg, this station in recent years has become one of the most important on the Hope's extensive pipe line system in West Virginia, having been modernized and enlarged for the purpose of operating one of the company's underground natural gas storage projects, putting gas into storage during the summer months and taking it out during the winter.

Two corrugated iron buildings, housing the four compressing units of 2250 horsepower and auxiliary equipment, two dwellings, cooling towers, water tanks, etc., comprised the compressing station property while a new dehydration plant, capable of handling 75-million cubic feet of gas daily, was practically completed and ready for operation.

On the fateful evening the four engines were busily engaged in forcing gas into the underground reservoir, operating on gauge pressures of 60 pounds suction and 290 pounds discharge. All was quiet and serene in the pretty valley when, out of the gathering darkness and pacing the unprecedented cyclone, came a violent electric storm with wind of high velocity which tore portions of the roof from the main compressing building.

Sensing disaster, the two men on duty (Dean Zarbaugh, engineer and Dewey McEldowney, oiler) sprang into action but had barely time enough to pull the ignition switches and shut down the huge engines when the cyclone struck in all its fury. With the building being torn apart the men dived beneath the engines where they hung on desperately during the terrifying few moments the cyclone raged and as structural steel roof trusses, traveling cranes, chains and other heavy steel objects crashed down and buried the engines and men.

Dazed and painfully injured, after the storm had swept on to the east, the men crawled from their steel prison to find that all buildings had vanished including the dwellings, one of which had been Zarbaugh's home.

Bridgeport compressing station, Hope Natural Gas Company, as it looked immediately after the cyclone of June 23, 1944.—Photo taken morning of June 24th.

* *This record of disaster and heroism furnished us by L. L. Tonkin, President and Manager of Hope Natural Gas Company, Clarksburg, W. Va.—Ed.*

June 28th, four days after rebuilding commenced. Temporary wooden roof over main units well under way; framework of auxiliary building partially completed; and water spray line along creek bank almost completed.

His wife with infant daughter in her arms were found in an adjacent field in a pool of blood, the baby fatally injured but the mother is recovering from serious injuries. Fortunately, the occupants of the other dwelling were absent for the evening.

Fearful of explosion, fire and further disaster because of escaping gas, the connections on the main gas headers having been broken, Zarbaugh and McEldowney, refusing medical attention, hurried to the station wreckage and closed the heavy main gas valves, after which they were removed to the hospital for treatment.

Dawn of June 24th revealed the awful toll taken by the "terror of the night." The station property was a scene of wreck and ruin with buildings and water tower completely demolished, the service tank loaded with 5000 gallons of water had crashed on the exposed tube gas coolers from its 40-foot elevation, the 50-foot vertical dehydration still lay on its side with half of the concrete base torn from the ground. A twisted mass of steel wreckage had imprisoned and badly injured the four main engines and gas compressors, the electric generators and some motors were soaked with acid from storage batteries and every piece of equipment was damaged to some extent and plastered with mud. Bridgeport station appeared wounded unto death.

But, throughout the night, emergency, wreckage and repair crews had been hastening to the scene of disaster from various points on the company's system and at daybreak these men went into action—quietly, quickly, efficiently. Twisted wreckage was laboriously cleared away and, while repair work proceeded on the damaged machinery, a temporary wooden canopy, 61 x 87 feet, was raised over the main compressing units, a new auxiliary building was commenced, a new water tank erected on a nearby hillside, connecting lines laid to it and a temporary water spray line installed on the banks of the creek for cooling purposes, damaged tubes in the gas coolers were replaced and the side frames straightened or replaced.

Favored by splendid weather and working feverishly 24-hours a day, these Hope employees accomplished little short of a miracle, having two 500 h.p. compressing units, all auxiliary equipment and a new water system in operation on June 29th, only five days and 17 hours after the cyclone struck, the third 500 h.p. unit was started July 3rd and the fourth, a 750 h.p. twin engine, went into action again on July 8th. Repairing and completion of the new dehydration plant placed it in operation July 24th, a complete new water cooling system was in action July 27th and construction of a new steel compressor building, 64 x 90 feet, will soon be started around the temporary canopy now sheltering the main units and completed while the plant continues in full operation. $50,000.00 is the estimated cost of restoring the station to its pre-cyclone efficiency.

The management of the Hope Natural Gas Company acknowledges with grateful appreciation the efficient, loyal and hardworking efforts of its corps of employees who accomplished the transformation at Bridgeport station in such a remarkably short time while especial praise and commendation is given to Dean Zarbaugh and Dewey McEldowney for the prompt, cool and heroic manner in which they responded to a fearful emergency; forgetful of self and loyal to the company they splendidly performed a most difficult task under terrifying conditions, thus answering in a most gratifying manner a query long pondered by the management, i.e., "How would our men react to an unusual and dangerous emergency?"

July 1st. Temporary building completed; framework for auxiliary building completed; and two compressing units in operation.

The Customer Survey Approach to Postwar Sales Planning

How two market Surveys—spaced four years apart—are helping the Equitable Gas Company develop its residential program for a vigorous postwar expansion of gas appliance sales

The Equitable Gas Co., Pittsburgh, Pa., has made two customer surveys, the first completed in 1939 and the second 1943. This article was printed in the June issue of Servel News, and the lessons to be learned from it are so important, that we are reprinting it. The surveys cover cooking, refrigeration, water heating, central heating and space heating. For lack of space we have omitted reproduction of their survey questionnaire forms.—Ed.

IN the extensive market research studies of the Equitable Gas Company of Pittsburgh, Pennsylvania is one of the gas industry's most impressive examples of the far-reaching benefits to be gained from well-planned, comprehensive, and analytical customer surveys.

Two surveys, conducted four years apart, have proved to this utility that market research is a tested and practical approach to the problem of postwar sales planning. The first survey, completed in 1939, led to a substantial development of the company's residential market. The second survey, completed in 1943, is now providing able direction for a vigorous postwar expansion of that market.

In Enviable Position

Today, as a result of these two surveys, the Equitable Gas Company is in an enviable position for expanding its residential gas load. Not only does it have a full appreciation of the characteristics of its residential market for gas appliances but is equipped with all essential facts for building its postwar sales program.

Perhaps no other utility offers a more timely illustration of how such a survey can be started—how it can be conducted—how it should be analyzed—and what it can do to help increase sales. In the following case study are the answers to many of these problems that should prove invaluable to other gas companies.

A Lesson Is Learned

Emerging from the depression years of the early '30's with an acute awareness that its fortunes were too largely influenced by a preponderant industrial load, the company saw the necessity for greater cultivation of its residential market. Lessons learned during the depression showed that if a larger percentage of its total revenues were derived from the residential field, the company would fare much better during periods of industrial depressions.

This realization led to the company's decision to enlarge its residential market for gas appliances. The first step was to form a group of company executives to appraise past sales history and to formulate a new program for increasing residential gas sales. F. B. Jones, who became general sales manager in 1939, was appointed chairman of this committee.

D. P. Hartson, vice-president and general manager, Equitable Gas Company, Pittsburgh, Pa.

The committee soon reached the conclusion that any new program should be based on definite and complete facts for the purpose of visualizing the character and extent of the residential market that was to be developed.

Questionnaire Is Designed

Guided by a mass of general survey procedure and experience, the committee determined that an interview with 1/20th of the gas company's residential customers would be representative of the entire market. The next step was to design a questionnaire that would search out the information needed with regard to all major types of appliances in the home. Particular emphasis was given to heating applications around which the survey and ensuing sales program was pointed. This market research project was directed by S. D. Forward, supervisor of sales planning for Equitable.

At this time the company had 168,000 residential meters in service. On the basis of the 1/20th sample, or about 5% of the total meters, it was indicated that 8,400 customer interviews were required.

In order to speed up the survey as much as possible, a force of 22 men was recruited as interviewers. Some of these were junior salesmen who had been with the company only a few months, while others were recruited from outside sources. Plans called for about 400 interviews by each representative.

Then followed an intensive training period to imbue the men with proper research attitudes, which the company considered most important, and to educate them in the best procedure for interviewing the customer. Practice sessions were held in filling out sample questionnaires and all these forms were carefully checked. No men were sent into the field until two weeks of such training had been completed.

Even then the practice training was continued. Although the men did not

know it, the initial questionnaires were for further practice only and were not used in the final tabulations. For this warming-up process the company selected a group of customers that would offer the interviewers the best possible experience.

Surveys Began in 1938

The company began its actual field survey in November, 1938, and completed the work four months later. As each individual survey report was finished the information was transferred to I.B.M. punch cards so that it could be used in mechanical sorting machines. By the time the survey was completed, all punch cards were ready for analysis.

Physical data from the survey were checked with the Pittsburgh census and with the Pittsburgh Real Property Inventory on the number of central heating plants and other factors. These checks gave confidence to the committee that in general the data were reliable and could be used as a basis for projecting sales quotas and expectancies.

The committee's first analysis of the survey data was designed to reveal information on the heating market in which the gas company was particularly interested. In addition to this, however, the analysis was used to project the overall program of company and dealer sales quotas on all appliances such as conversion burners, gas boilers and furnaces, circulating heaters, water heaters, refrigerators and ranges.

Out of this analysis came the recommended sales program that was approved about the middle of 1939. The remainder of the year was used as a period for recruiting and training new salesmen. By early 1940 the company was then ready to begin its new sales activities.

From the detailed information made available by the survey it was possible to break down the company's residential market into small units and to appraise the sales potentials of each based on income levels. By keying the survey information to market areas, the territory was divided into 40 separate units with an average of 4,200 gas meters per salesman, each territory having equal buying power.

Salesmen Are Trained

In practice, this meant that some salesmen had as many as 5,000 to 6,000 customers, where others were down as low as 2,500 to 3,000 customers. The survey data, however, showed that sales opportunities were fairly equal for each territory.

F. B. Jones, general sales manager of the Equitable Gas Company, who is also a member of the Company's Post-war Planning Committee.

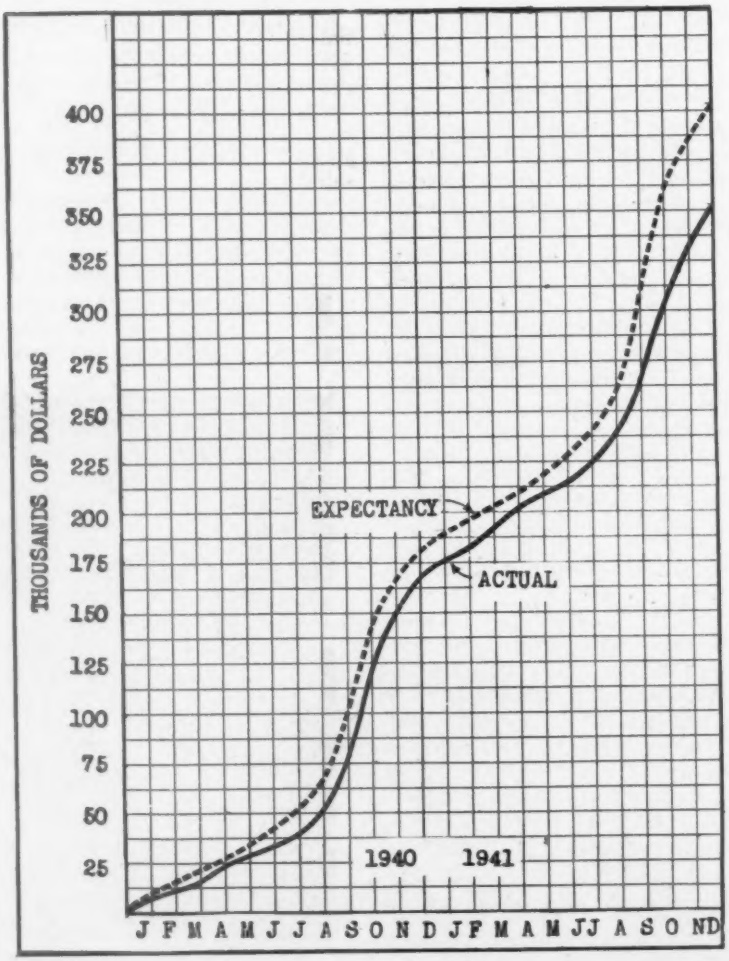
Then began the organization of the sales department. All salesmen, upon being recruited, were put on a cadet basis and given a 60-day training period. This included about two weeks' experience in various operating divisions of the company to acquaint them with the physical aspects of the natural gas business. Then they were put through a period of class work on company history and policy, as well as product training on all appliances they were expected to promote.

During this time they were also given instructions on the fundamental principles of salesmanship and the specialized techniques of selling gas appliances. The last two weeks of the 60-day period were spent in field work under a sales supervisor.

A Five-Year Program

The original sales program was planned to extend over a five-year period beginning in 1940. Expecta-

SALES EXPECTANCY VERSUS ACCOMPLISHMENT



CUMULATIVE NET ADDED LOAD REVENUE FOR 1940-1941

tions were that new residential gas revenue approximating $1,200,000 would be obtained with adequate support of advertising and promotion.

Special quarterly reports, initiated by the sales management during the year 1940, were made to company executives. These showed the progress of the program and the realization of sales quotas which had been prepared on the basis of survey data. As may be seen from the accompanying chart, these reports closely paralleled the objectives established at the beginning of the program. The chart shows the Equitable Gas Company's actual sales results as compared with sales expectancies for the years of 1940 and 1941.

While the original sales expansion movement was planned on a five-year basis beginning with the year 1940. Pearl Harbor abruptly terminated the selling activity.

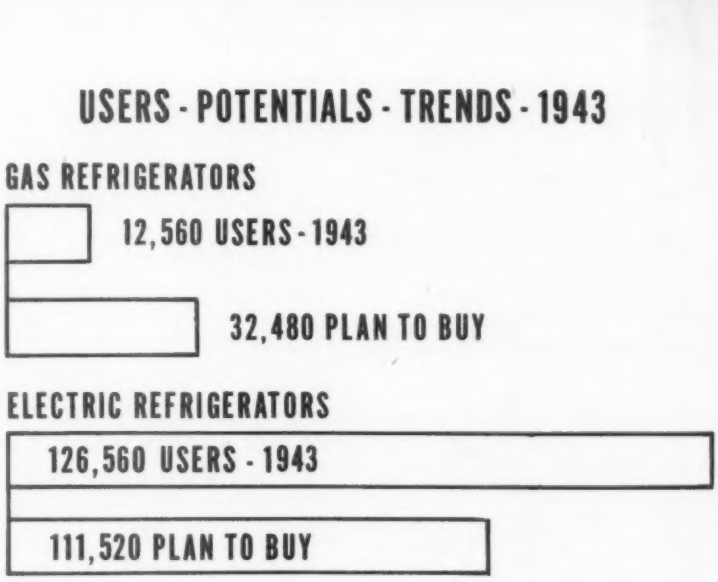
These quarterly reports were found to be so helpful during 1940 that they were continued into 1941. However, in the latter months of 1941 considerable difficulty was experienced in obtaining appliances, particularly in heating equipment. Because of this situation, the total sales for the last six months of 1941 were adversely affected and should be borne in mind when studying the expectancy and result curves of the chart.

The War Interrupts

Then came Pearl Harbor. It was inevitable that the sales organization that had been built up to carry out this enlarged sales program would have to be dismantled. This was done gradually to permit the absorption of salesmen into the armed forces or into war industries. The decline in sales personnel continued until the end of 1942 when only five residential salesmen remained.

Meanwhile the company had retained most of its sales supervisory personnel, which together with the remaining salesmen, were changed over to wartime activities involving the promotion of gas and equipment conservation, handling customer requests for gas appliances or increased deliveries of gas itself under limitation orders.

In the early part of 1943, Mr. D. P. Hartson, Vice-President and General Manager of Equitable Gas Company, decided that the company should begin seriously to study its postwar situation. He felt that the approach to this problem should start with appraisal of the company's sales prospects, financial considerations, expansion of physical facilities, improvement in operating efficiency and realignment of functional duties.



Committees Appointed

For this study, a Postwar Planning Committee was appointed. This consisted of three major executives of the company, namely, F. N. Wolf, assistant to vicepresident and general manager, who was made chairman; F. B. Jones, general sales manager; and H. H. Pigott, the operating manager.

In the natural gas business, most of the supply problems are closely related to anticipated volume, whether the company produces its own gas or purchases it. Therefore, it became obvious that before definite plans as to future gas needs and possible pipe line enlargements could be formulated, a study of the market possibilities had to be the first step in the program.

This led to the formation of a Postwar Marketing Committee consisting of nine members representing practically all principal phases of the company's activities. W. S. Redpath, manager of the conservation department and formerly sales promotion manager, was made chairman of this committee.

When this Postwar Marketing Committee had studied the several aspects of its assigned problem and the types of basic information needed, it came to the conclusion that a second market survey, somewhat similar to that completed in 1939, would be most helpful.

Among the factors contributing to this decision was the fact that over four years had elapsed since completion of the first survey. It was felt that a check on the more important trends in appliance saturations and customer attitudes that might have taken place during this four-year interval would be of invaluable aid in making postwar plans. It was also considered desirable to check on the actual sales results from the dealer cooperative movement which had been established some years earlier.

Once again, Mr. Forward's experience in market studies was utilized through his direction of the second survey and his comparisons with the earlier findings.

The first market survey in 1939 had covered a 5% sample of the company's residential market. Comparison with census data and other known facts had indicated an accuracy within 1% or less. Considering the manpower problem and in deference to the war program, it was decided that only each 80th customer, or 1¼% of the total, would be sampled this time. It was felt, however, that the results would be accurate enough to present a fair picture of the new market.

Another Survey Made

Sixteen college girls majoring in business economics, psychology, or social science were recruited as interviewers. These girls were given a week's intensive instruction on the use of the questionnaire, how to recognize gas appliances, and the technique of gaining the customer's interest. The training was completed with two days of actual field experience with sample questionnaires not included in the survey tabulations.

At this time the company's residential service had expanded from 168,000 to 177,000 customers. On the basis of the 1/80th sample, 2,212 interviews were required. Due to efficient organization and training, this work was completed in 22 days.

The mass of data that was ob-

tained from the second survey is now currently being used by the Postwar Marketing Committee in formulating sales quotas for the postwar period in much the same fashion as the sales quotas were set up in 1939.

A comparison of the 1939 and 1943 surveys has been most helpful to the Equitable Gas Company in many ways. Both surveys brought to light certain information as to customer likes and dislikes on gas appliances which have been of definite value in promotional and advertising copy. For example, the 1939 survey brought out the fact that most customers disliked moisture and fumes associated with unvented gas room heaters. The result of this finding was that in all the company's sales efforts properly vented gas appliances, particularly room heaters, were stressed.

Constant Checks Needed

"Experience with the two surveys indicates to us that some sort of check on appliance saturation trends, customer attitude, and satisfaction regarding gas appliances, should be made in normal times at intervals not greater than three years," says F. B. Jones, general sales manager.

"Perhaps certain items relating to the company's markets should be checked each year. Our experience with these two studies, using samples of 5% and 1¼% of the customers selected on a mathematical basis, indicates to us that future surveys, in our territory at least, should use about a 2% sample. Slightly greater accuracy than that achieved in the second survey, on sparsely distributed items, is desirable. On the other hand, considering the number of calls, time involved and degree of accuracy on the first and larger survey, do not appear to justify a sample as high as 5%.

Factual Data Essential

"Our sales philosophy," says Mr. Jones, "is that once we have the facts regarding our market and our customer's thinking, then the company is in a much more sound position to formulate a sales program and apply whatever marketing policy seems to best fit its particular territory and conditions.

"For example, we hold no brief for certain phases of the dealer cooperation angles that were used in the years 1940, 1941 and 1942, and are diligently searching for a more workable and practical marketing policy that will best utilize our sales allies. We have found, however, that if we can go to dealers and other sales agencies with definite facts regarding our market and its possibilities, we are in a much better position to solicit their cooperation and active support. In fact, it seems almost to be a requisite that a company should have such data before seriously at tempting to build a strong dealer cooperative plan."

As a closing comment on the use of gas obtained from market surveys, Mr. Jones adds that the use of such information requires a great deal of judgment and analytical ability.

Must Evaluate Properly

"Perhaps more care should be used with such data than if the survey were entirely based on physical facts," he states. "Data that relate to customers' intentions to buy, as well as customer attitudes, must be constantly qualified by the time and conditions under which the customer was contacted.

SATURATION CHANGES FROM 1938 TO 1943

TYPE OF USE	% OF CUSTOMERS — RESIDENTIAL	
RANGES — COOKING	**1938**	**1943**
Gas Range	80.0	88.2
Gas Hot Plate	1.0	0.7
Combination Range	17.0	10.3
REFRIGERATION		
Gas	4.1	7.1
Electric	51.1	71.5
Ice	37.9	17.9
WATER HEATING		
Gas Automatic Storage	3.9	11.2
Gas Instantaneous	14.3	16.8
Gas Side Arm — Tank Coil	53.7	48.2
CENTRAL HEATING		
Gas	4.7	6.2
Coal	50.0	59.3
SPACE HEATING		
Gas Only	9.5	7.0
Gas — Coal	15.9	10.0
Coal Only	13.7	10.3
Gas Auxiliary to Central Heating	58.6	69.2

"A study of our survey forms will show that they included data relating to physical factors and to attitudes or preferences; for example, whether or not a home had central heating, and whether the gas range is liked or disliked. The two types of data, of course, cannot be used with the same treatment. We have found that it is just as easy to misuse survey information as to properly interpret and evaluate its significance."

Benefits Are Numerous

Many other tangible and concrete benefits have been derived from both of these surveys. For example, the increase in market acceptance of gas refrigerators between the two surveys was due to the greater sales attention paid to that appliance. Similarly, a very satisfying increase in central gas heating systems was the result of special activity resulting from the first survey. A large number of gas ranges sold since 1939 was due to the cooperative activity developed with appliance dealers.

Springing from a need revealed by the first survey was the employment of a graduate architect by the company. Before the war, this man maintained close contact with architects, realtors and builders and assisted them with heating layouts, kitchen planning and specifications for gas appliances. Although this service has been suspended for the duration, arrangements are now being made to reinstate the activity soon. One of the phases of the new activity will be cultivation of interest in Servel All Year Gas Air Conditioning.

Another interesting and important development reflected in the 1943 survey was the results obtained from the indirect selling and good will campaigns projected by the sales promotion department, which during wartime has functioned as the conservation department.

The market trends and customer attitudes will also furnish the basis for timely institutional advertising. This will be further used in a program about to be released in connection with a series of advertisements calling attention to the various gas appliances which will be available after the war.

Future Is Promising

With the extent and character of its residential gas sales opportunities accurately defined by these two market surveys, the company is now well along with its postwar market development.

The company further views the survey as an aid in attracting new sales personnel for its intimate knowledge of markets and potentials has been most helpful in securing good salesmen. Not only does the availability of market data attract the better type of salesman but it furnishes the basis for sales training programs.

Fully conscious of the responsibility that it shares in the postwar economics of its community, its nation and its industry, the Equitable Gas Company is formulating all of its future planning along basic and proved plans. Facts and information secured through the two market surveys are contributing much to the promise of fulfillment of this responsibility.

NEWS FLASH!

Here's the story on the

NEW 1944 MAGIC CHEF

MODEL 7700 SERIES

● This fine new Magic Chef is now in production. It cannot be made in unlimited quantities because many necessary materials are restricted and difficult to obtain. And vital war products so urgently needed for Victory still must come first.

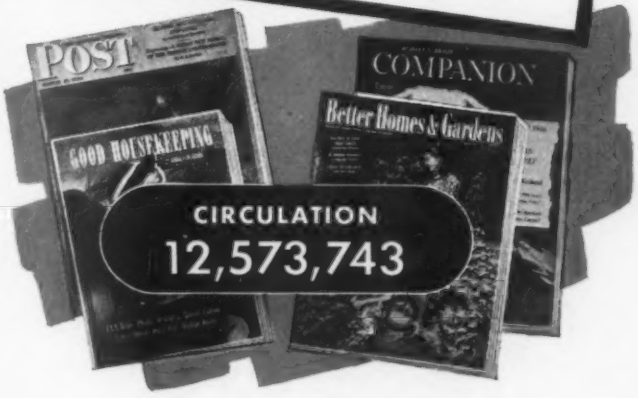
Magic Chef retailers may be assured that everything possible will be done to complete orders in the very near future.

You and your customers will find the new Magic Chef worth waiting for. It is a complete and modern gas range, equipped with the famous Red Wheel Regulator, automatic top burner lighting, all-steel construction, full insulation, and standard size oven, broiler and cooking top.

BACKED BY NATIONAL ADVERTISING

A sustained program of advertising in leading national magazines is at work paving the way for current and future sales of Magic Chef Ranges.

For details write your nearest American Stove Company office.



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The Symbol of Certified Performance

Magic Chef

RED WHEEL GAS RANGES
AND HEAVY DUTY GAS COOKING EQUIPMENT

Awarded to Quick Meal Stove Co. Division of American Stove Co.

New Pipe Line Construction in Southern California

By

Fred A. Herr

THE Southern California Gas Co. in mid-June launched work in connection with the first new pipeline construction programs of Class A magnitude which it has been able to undertake since the start of the war, involving 177,584 feet of new lines and improvements in its Central, Southern, Northern, Eastern and San Joaquin Valley divisions.

With priority approval granted by the War Production Board for 2860 tons of steel for pipe lines, the company's distribution department, under the direction of Distribution Manager Elting Henderson, is engaged on a $740,000 facilities improvement project which includes new pipelines and repair of existing lines.

The current new-work program involves the laying of 177,584 feet of line in 4, 6, 8, 12 and 16 inch diameter in four of the company's divisions. A total of 62,584 feet of 4, 6 and 8 inch line is allocated for the Eastern Division areas of Colton, Loma Linda, Beaumont, Banning, Redlands, with a 12,440 foot 8-inch line from Colton to Loma Linda listed as the top project in that division.

A total of 30,750 feet of new line is earmarked for the Central Division in 6, 8, 12 and 16 inch sizes in various sections of Hollywood, Pasadena, Beverly Hills, Westwood and the Western-Slauson Avenues districts in Los Angeles. The Southern Division will get 38,450 feet of new 12 and 16 inch line; and the Northern Division 45,800 feet, headed by 38,000 feet of 12 inch line across San Fernando Valley and miscellaneous shorter sections of 4, 6 and 8-inch line in Burbank.

The construction programs contemplates the laying of pipeline extensions in the different divisions as follows:

Division	4"	6"	8"	12"	16"	Total in Feet
Central		5,650	1,250	11,850	12,000	30,750
Northern	1,600	1,400	4,800	38,000		45,800
Southern				7,150	31,300	38,450
Eastern	2,935	47,209	12,440			62,584
	4,535	54,259	18,490	57,000	43,300	177,584

With practically no pipeline extensions made since the war began due to the inability of obtaining materials, and with active domestic meters increasing by 44,228 in the past 2½ years, the new work is rather urgently required to handle the larger volume of business, Henderson pointed out. Prior to December 7, 1941, Henderson asserted, a part of the Southern California Gas Co.'s normal practice was to make yearly additions to provide for increases in the domestic and industrial gas load. With steel on the deferred list since the start of the war, pressure reinforcements by the company had to be deferred.

Building construction during that period, however, proceeded at a rapid rate to provide housing for defense plant workers, Henderson explained, which resulted in the increase of more than 44,000 active domestic meters between December 7, 1941, and late spring of 1944.

The absence of routine pipeline extensions during these war years was reflected in company operations during the past winter's gas shortage and at the peak of the demand (December-January) caused some concern as to whether existing facilities would be able to cope with load requirements. This danger, however, was averted by restricting delivery of gas to industrial concerns in favor of domestic consumers and war plant installations.

Meanwhile, work on the Southern California Gas Co.'s new $4,000,000 pipeline from the Goleta dry gas field in Santa Barbara County to Los Angeles progressed another step with the awarding of contracts in June to the Pacific Pipeline Construction Co. for the laying of the first two sections.

The contract provided for grading and clearing the rights-of-way and the first crews were put to work June 21 on the Ventura end of the job, clearing rights-of-way, grading and building roads in preparation for the actual installation of pipe.

Delivery of the pipe itself was expected by the end of July. Two crews were made ready for handling the work, one consisting of 175 pipeliners, who will handle the principal construction; and a somewhat smaller group for construction of a short section of line in rough country near Ventura.

The first section consists of a 36-mile line of 16-inch pipe, designed to operate at maximum pressure of 1000 lbs. p.s.i., to be built jointly for the account of Southern California Gas Co. and Pacific Lighting Corp., including 34.4 miles for Southern California Gas Co. and 1.6 miles for Pacific, to connect the Ventura compressor station with the Goleta dry gas field installations.

The other section, on which actual grading was under way late in June, with pipe delivery due the end of July, involves 55 miles of 18-inch for the Southern California Gas Co., beginning at the compressor station in Ventura, and running southward roughly parallel with the existing Calabases line of the Pacific Lighting Corp., and terminating at the Haskell Avenue regulator station in Los Angeles.

Early award of contracts by Southern California Gas Co. is expected for construction of 12 miles of 22-inch line from the terminus of the 18-inch line at the Haskell Avenue regulator station to the company's Hollywood holder station. Concurrently, this company is proceeding with the conversion of some units of its Ventura compressor station to facilitate the compression of gas from 400 to 1000 lbs. discharge pressure and the installation of additional dehydration equipment for 1000 lbs. working pressure.

Homestead Valve Mfg. Co. Awarded 3rd Gold Star

A third additional gold star has been awarded by the United States Maritime Commission to Homestead Valve Manufacturing Company for their Maritime "M" Pennant.

Of the twenty-three manufacturers who have been awarded their third gold star, Homestead Valve Manufacturing Company is one of four which increased their production 20% or more during the past six months, as compared to the previous six months period.

"But *this valve will do the trick because it's* lubricated!"

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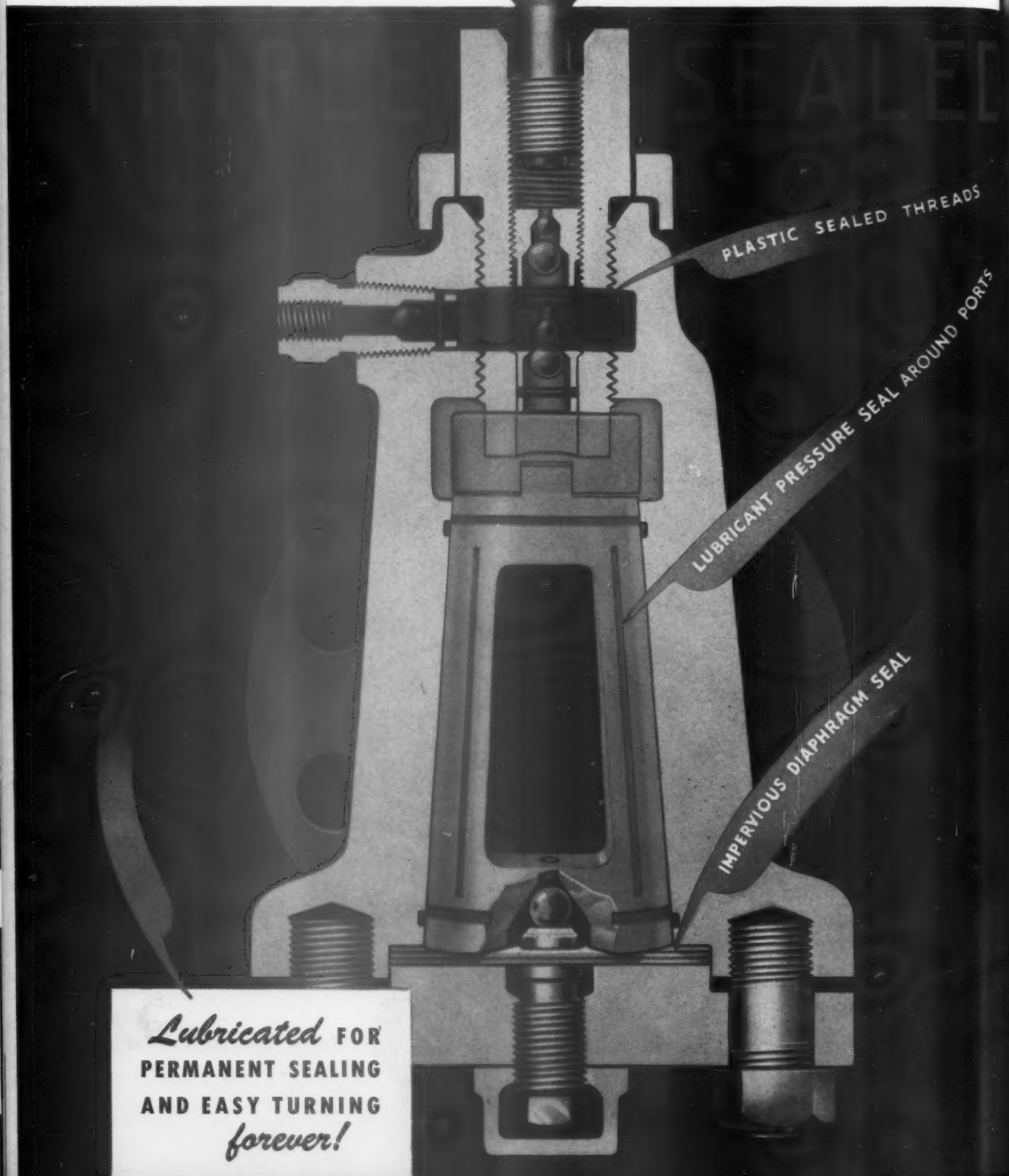


Lubricated **FOR PERMANENT SEALING AND EASY TURNING** ***forever!***

Vaporizing Methanol To Reduce Gas Freeze-Up Pressure Calls

By

Amos H. Abbott

Gas Engineer,
Northern States Power Co.

AFTER the extremely cold winter of 1936, during which a great many gas service freeze-ups occurred, our company attempted to reduce these service calls by vaporizing methanol into the gas as it leaves the holders. The theory in back of such operation is of course quite apparent. During the winter months of January and February, gas leaves the holders to go into the distribution mains at a temperature of about 40° F. and saturated with water vapor at this temperature. This gas is cooled in the mains to a temperature of probably 32° to 35° and deposits moisture and perhaps some frost. This gas then goes through the more shallow service pipes and often reaches a temperature of 30° or lower before it enters the customer's basement. In such cases a deposit of frost occurs in the service pipe and effects a stoppage of gas flow. If an anti-freeze such as alcohol or methanol is vaporized into the gas as it leaves the holder, the water condensation formed in the mains and services will contain some of this anti-freeze and to some extent will be non-freezing at the temperatures encountered in the underground pipes.

We made some laboratory tests on this phenomenon and found that when gas saturated with water vapor at 42° temperature and containing methanol vapor was cooled so that the moisture was condensed and frozen, the following data was obtained.

Gals. of Methanol Per MCF of Gas	*Freezing Point of Condensate*
.01	17°
.02	13°
.03	6°
.04	—2°

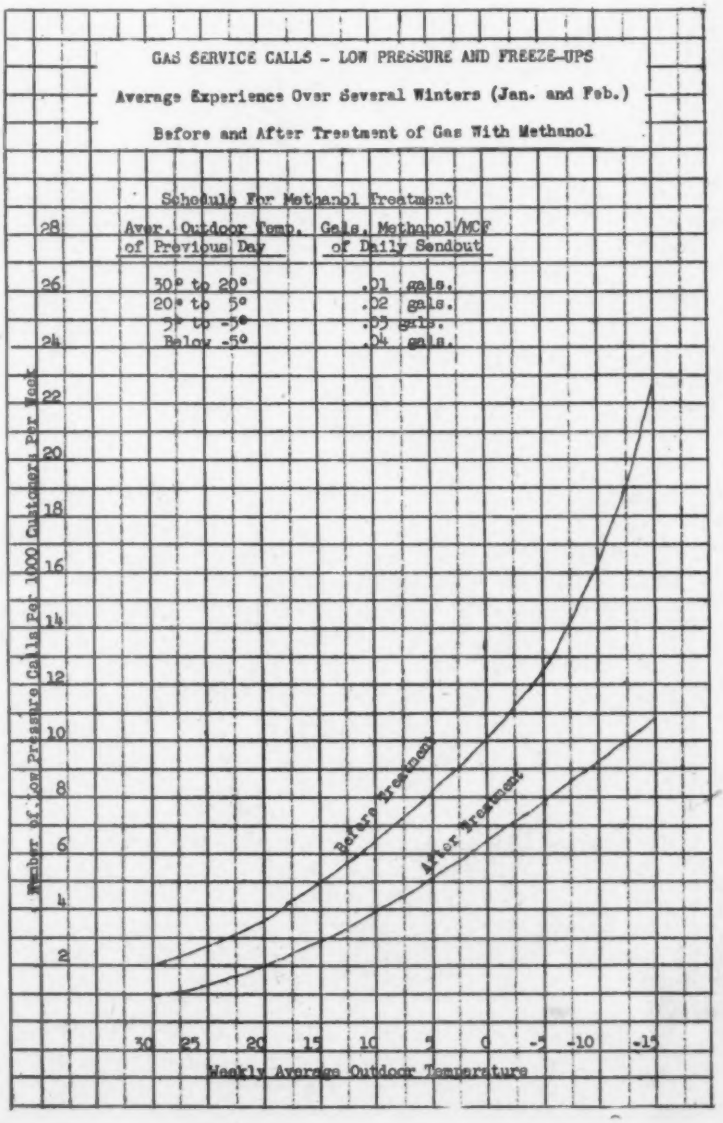
This means that as the moisture condenses out of the gas it brings down some methanol with it and if the proportions of methanol vapor and water vapor are correct, the condensation will not freeze at ordinary service pipe temperatures. We found that methanol was much more effective in this than was ethyl alcohol.

In a number of our smaller distribution systems where experience had shown that freeze-up complaints had been too numerous, we set up some vaporizing equipment and for the past seven years have been treating the gas with methanol vapor during the winter months. We endeavor to proportion this methanol vapor to the gas volume, ranging from .01 to .04 gallons of methanol per MCF of daily sendout, and with an attempt to put it all in during the day hours from 9:00 A.M. to 1:00 P.M. and from 4:00 P.M. to 7:00 P.M. The actual quantities used each day were determined by the outdoor temperature of the previous day. The colder the weather the more methanol was used per MCF of sendout. We followed quite closely the following schedule for such treatment:

Aver. Atmospheric Temp. of Previous Day	*Gals. Methanol Per MCF of Daily Sendout*
30° to 20°	.01 gals.
20° to 5°	.02 gals.
5° to –5°	.03 gals.
Below –5°	.04 gals.

Results Achieved

The results of this treatment are about what is indicated by the attached curves. The upper curve shows freeze-up calls per week per 1000 customers in service, plotted against average weekly outdoor temperatures, and without any treat-


GAS SERVICE CALLS - LOW PRESSURE AND FREEZE-UPS
Average Experience Over Several Winters (Jan. and Feb.)
Before and After Treatment of Gas With Methanol
Schedule For Methanol Treatment
Aver. Outdoor Temp. of Previous Day
Gals. Methanol/MCF of Daily Sendout
30° to 20° .01 gals.
20° to 5° .02 gals.
5° to -5° .03 gals.
Below -5° .04 gals.
Number of Low Pressure Calls Per 1000 Customers Per Week
Before Treatment
After Treatment
Weekly Average Outdoor Temperature

ment of gas with methanol vapor. This curve contains the composite experience of several gas systems over several years' time and the experience data indicate quite a definite trend. Notice how the number of freeze-ups increase as the outdoor temperature goes down. The lower curve shows experience also over several years' time and for the same distribution systems, but where methanol was vaporized into the gas during January and February and in about the quantities as indicated above. For the same outdoor temperatures and presumably quite comparable ground temperatures, we notice the number of freeze-up complaints is reduced by about 40% when the atmospheric temperatures are at zero. For higher temperatures this reduction is not so great, but for lower temperatures it seems to be even greater.

Probably even more pressure calls could have been eliminated if more methanol were used; however we questioned the advisability of too much expense to eliminate the few remaining calls. There seem to be some good reasons why this treatment is not 100% effective in eliminating freeze-up pressure calls even if more methanol is used than seemed necessary from the laboratory tests. Some experience has indicated that concentration of anti-freeze vapor is reduced by travel through the distribution system. Undoubtedly some of the condensation formed in the mains contain some anti-freeze and as the gas is further cooled in the service pipes the condensation formed there may not contain enough anti-freeze to prevent crystallization of frost, or the condensation may be mushy and will not drain out of the pipe. Then, too, the liquid condensation that does form in the service pipe may cause a poor pressure call even though no frost is involved. Also, we did not very accurately proportion the methanol vapor to the gas flow each hour and we gave no treatment at all during the hours of light load. Considerable research seemed necessary to obtain any more accurate data and we were satisfied with the practical benefits.

On Exposed Lines

Another important result from vaporizing methanol in the gas has been experienced in the keeping of frost out of bridge lines or other exposed pipe. Methanol in the above proportions seems to be very effective in removing frost formed in bridge lines and also in preventing its formation. Where we used to see the inside of bridge lines all white with frost at temperatures of zero or lower, an inspection after methanol treatment shows no frost and the inside of the pipe is wet with non-freezing condensate. The condensate pumped from bridge drips in such cases is usually very non-freezing. In one instance a bridge line is located about a mile and a quarter from the plant and is kept clear all winter by methanol treatment of the gas at the plant. It is certainly a satisfying feeling for the Gas Superintendent to inspect his bridge lines at temperatures of below zero and find them clear of frost and actually wet with non-freezing condensate.

There are probably other and better ways of reducing freeze-up pressure calls, but in our smaller systems where freeze-up calls have been quite numerous and extensive, we think this emergency treatment has been fairly effective and not too expensive.

Presented at the War Conference of the Wisconsin Utilities Association at the Pfister Hotel, Milwaukee, Wisconsin, on May 19, 1944.

The Tougher the Going— the More Reason for
"CLEVELANDS"
Taking the Tough Jobs in Stride is a Proved CLEVELAND Characteristic
For more than twenty years "CLEVELANDS" have been put to the toughest tests on hundreds of ditching jobs in all sort of soils and over the roughest terrain, and have continuously, according to the record, delivered maximum performance. ● Contributing to "CLEVELANDS" ability to deliver maximum performance under normal or emergency conditions are these features: Multi-Speed Transmission — Abundant Power — Operating Ease — Maximum Maneuverability — High Capacity Digging Wheel — Balanced Design — Unit Type Construction — Top Quality Material.
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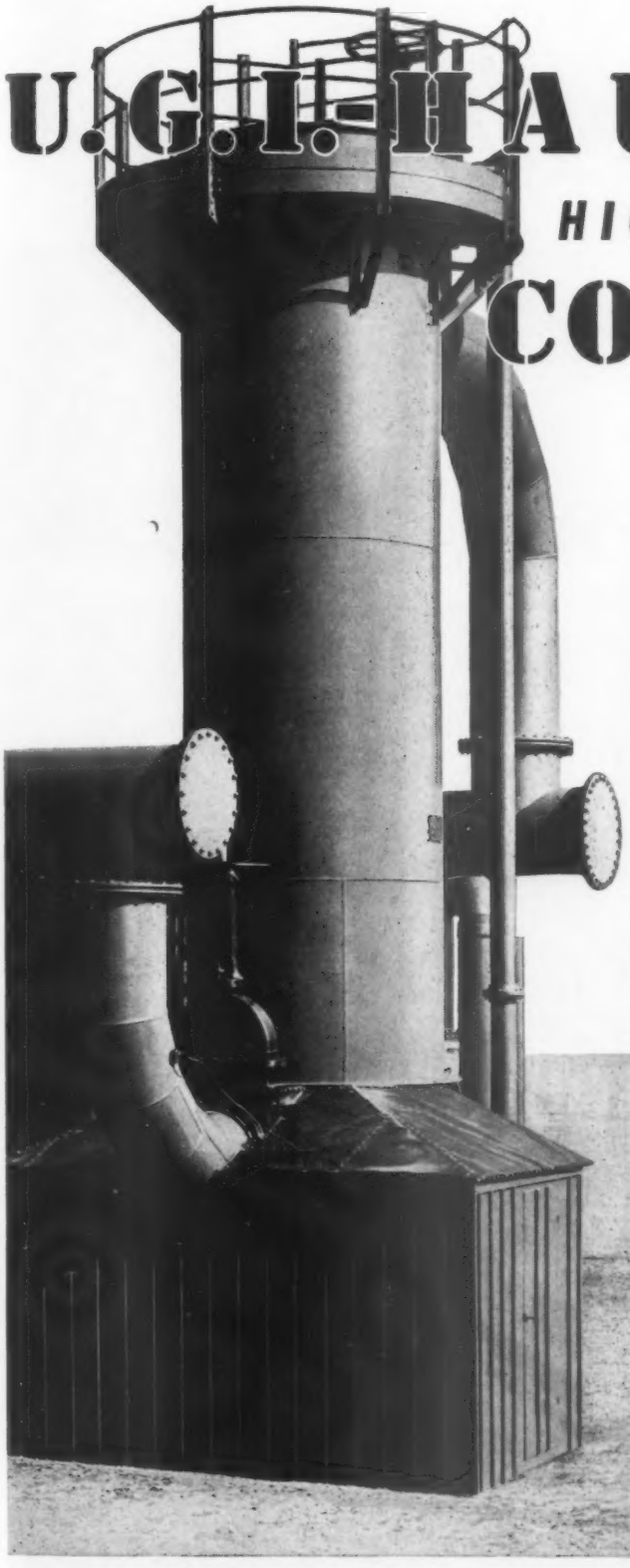
"CLEVELANDS" Save More . . . Because they Do More

U.G.I.-HAUG HIGH DUTY CONDENSER



ADEQUATE condensing is an indispensable part of proper gas conditioning and provides an important step in the prevention of liquid phase gum troubles.

U. G. I.-HAUG HIGH DUTY CONDENSERS embodies advanced principles of heat transfer as applied to the cooling of gas and offers the following advantages; ■ High rate of heat transfer— ■ Fresh or salt water cooling design available— ■ Designed to meet your specific needs— ■ Gas cooled to temperature close to temperature of water— ■ Removal of liquid phase gum formers consistent with cooling water temperatures.

U. G. I.-HAUG HIGH DUTY CONDENSERS now on order will have a total capacity to cool over 75,000,000 cubic feet of carburetted water gas per day.

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UNITED SERVICES PROVIDE

EXPERIENCE IN DESIGN
United has over 50 years experience in gas plant design.

EFFICIENT APPARATUS
United has pioneered major developments in water and coal gas production.

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United has large well organized forces for gas plant and general construction work.

EXPERIENCE IN OPERATION
United has experienced plant operators for securing most efficient results.

*U. G. I. SALT WATER CONDENSER, CAPACITY 6,000,000 CU. FT. PER DAY

UNITED ENGINEERS & CONSTRUCTORS INC

NEW YORK PHILADELPHIA CHICAGO

for dependable GAS HEATING

These products are engineered by gas heating specialists and embody every advanced feature for efficient, automatic and fuel-saving performance. A complete line (several items of which are shown here) meets every need of heating and hot water supply. Most models are available now for essential uses under WPB Limitation Orders; others must wait until Victory comes.

When you sell or recommend American Gas-Fired Equipment you are sure of outstanding quality and dependability, backed by the best known name in heating. We invite inquiries regarding our products and their current availability.

GAS - FIRED
AMERICAN
HEATING EQUIPMENT

EMPIRE GAS BOILER

A masterpiece of engineering and design. Completely automatic. Handsome jacket encloses all controls. Range of A.G.A. ratings: Steam, 255 Sq. Ft. to 1600 Sq. Ft.; Water, 210 Sq. Ft. to 2560 Sq. Ft.

STANDARD GAS BOILER

Equally efficient as the Empire and available in larger sizes. Range of A.G.A. ratings: Steam, 610 to 16,000 Sq. Ft.; Water, 210 to 25,600 Sq. Ft.

MOHAWK GAS FIRED WINTER AIR CONDITIONER

An attractive, quiet, completely automatic unit for winter air conditioning in small, medium or large homes. Nine sizes ranging from 60,000 to 300,000 A.G.A. Btu input per hour.

SHAWNEE GAS FIRED WARM AIR FURNACE

Fine appearance, durable steel construction, dependable controls and ribbon burners make the Shawnee outstanding for thrifty gas heating. Seven sizes with A.G.A. Btu input per hour from 65,000 to 140,000.

BUDGET GAS FIRED WATER HEATER

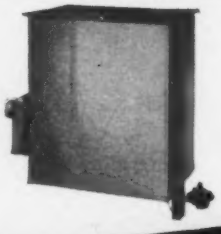
Provides ample hot water automatically at nominal cost. A white enamelled, insulated, steel jacket, with black trim, conserves heat and adds smart appearance. 3 sizes—20, 30 and 40 gallons.

AMERICAN GAS FIRED STEAM RADIATOR

A complete heating unit that provides the comfort of radiator heating—automatically. Unvented type with special Thermal Control, and other good features which assure controlled operation and good economy.

AMERICAN GAS CONVERTER

Converts any round boiler or warm air furnace to gas burning. Available in a wide range of sizes. Has the exclusive Thermotor Throttling Control, which centers all control functions in one valve.



SAGINAW GAS FLOOR FURNACE

A low cost unit for small homes. Provides satisfactory heating results with minimum fuel—completely automatic if desired. Four sizes: 20,000, 35,000, 50,000 and 70,000 A.G.A. Btu input per hour.

AMERICAN RADIATOR & Standard Sanitary
New York CORPORATION Pittsburgh

"Dream Homes" Threaten Building Industry

Survey Shows Public Won't Buy Or Build

Post-War Homes Without Miracles

MOST business leaders, industrialists and economists look to private building and its Allied interest to form a potent stabilizing force in our post-war prosperity. But a recent survey of consumer demands and expectations in post-war homes shows that this will not be true unless the public's conception of "miracle" housing is exploded.

The revealing study, sponsored by the National Association of Home Builders, clearly shows that prospective home buyers are convinced a new era of "dream world" houses will start the day hostilities cease. Their expectations, fostered by well-intended but misguided post-war prophets, portend harmful consequences for the building industry in particular and the nation's economy in general.

The popular delusion of the "miracle" house must be dispelled and replaced with the true story of the many practical improvements in design, construction methods, and, interior equipment that will provide more livable houses. Otherwise, the building industry faces the thankless task of dealing with a disillusioned and disappointed public in the immediate post-war years. As a consequence, the industry will not be able to do its full share in providing employment.

Home building is expected to play a leading role in solving the problem of post war employment. However, there seems to be a widespread erroneous conception of the "miracle" house.

So serious is this problem regarded by the National Association of Home Builders that they have had a survey made in order to project a true picture of the better Home of Tomorrow, which they state will be evolutionary in character, not revolutionary. This article gives some results of the survey amongst people who plan to purchase homes after the war and what they want the house to be like.

High Points of Survey

The survey was conducted in Atlanta; Chicago; Columbus, Ohio; Hartford, Conn.; Houston; Minneapolis; Pittsburgh; Rochester, N. Y.; and San Francisco. It was confined to the broad middle class with an average annual income of $3,027, and embraced the middle younger age bracket. Of the families interviewed, 32% owned their homes and 68% were non-owners, but 45% of the total indicated they expected to build or buy a home. The great majority, or 68%, expected to build or buy from one to two years after the war.

More than half of those interviewed expected to get a six room house with two baths, replete with mechanical wonders. Yet, they planned to pay an average of only $52 per month in financing the mortgage.

Prospective home buyers were asked this question about six projected developments in low-cost homes:

"At the price you intend to pay, do you believe that any of the following 'revolutionary' changes will be available?"

	Per Cent Expecting It to Be Available at Price They Are Willing to Pay	*Available How Soon after the War*
Complete air-conditioning with cooling in the summer as in the movies	72%	10 months
Electronic controls which will make housekeeping far more simple than today	81%	11 months
Extensive use of plastics for plumbing pipes, bathroom fixtures, wall surfaces, etc.	81%	8 months
Movable partitions which permit the making of one room out of two, or vice versa	60%	6 months
Outside walls which can be opened up on a garden or terrace in warm weather	54%	8 months
Rooms built as complete units which can be added or removed, depending on family requirements	56%	8 months

In other words, the overwhelming majority, planning to pay an average of only $52 per month, expect construction features or products which either did not exist in the pre-war period, or which were available only to a minority of home buyers in the high income brackets.

Won't Buy Without Miracles

The most revealing part of the survey (which should awaken everyone to a realization of the damage already done by over-selling the public with predictions of impractical things to come) was contained in replies received to this question:

"Would you build or buy a new home if you could not get any or all of the six typical 'revolutionary' changes in home construction?"

Here's what the consumers interviewed had to say:

54% said they would not build or buy if they could not get complete, year-'round air conditioning.

62% said "NO" if they could not get electronic controls which would make housekeeping far more simple than today.

53% said "NO" if they could not get extensive use of plastics for plumbing, pipes, bathroom fiixtures, wall surfaces, etc.

27% said "NO" if they could not get movable partitions.

37% said "NO" if they could not get outside walls which could be opened up on a garden or terrace.

28% said "NO" if they could not get rooms built as separate units which could be added or removed.

A further breakdown of the replies disclosed that familes willing to pay more than $60 in monthly installments for their home expected

the most for their money; those in the $40 to $60 bracket expected only slightly less; but even among families willing to pay less than $40 per month, from one-fifth to two-fifths said they would stay out of the market unless they could get the six typical "revolutionary" changes they had been led to believe would be available in the immediate post-war years.

In other words, the survey clearly indicates that families in the broad, middle income group—the bulk of the post-war market—say they will postpone buying a home until the "magic house" can be purchased at the price they are willing and able to pay.

Because of these alarming implications, the National Association of Home Builders has inaugurated a nation-wide missionary campaign to destroy the illusion of the "miracle house" and to project in its place a forthright picture of the attractive, practical "Home of Tomorrow."

What Consumers Can Expect

Just what will the improved "Home of Tomorrow" be like in design, construction and interior equipment?

Frank W. Cortright, Executive Vice-President of the National Association of Home Builders, speaking for the nation's leading builders, says:

"There will be gradual, progressive evolution in home building, but not drastic revolution. Greater emphasis will be placed on selection of site and designing the house to blend with the general surroundings to provide a maximum of spacious living.

"Conventional types of home will continue to dominate the American scene, with reasonable modifications, such as wider acceptance of the low, sweeping roof lines of the California and Florida styles.

"In construction and equipment, the builders will be able to deliver the best types of pre-war housing with considerable more window area, increased emphasis on size and charm of the living room at the expense of the dining room. Especially attractive kitchens and bathrooms and appealing basements will be outstanding features of post-war homes.

"Practical, labor-saving devices to reduce the burden of housekeeping will be built into these homes, depending upon the wishes of the consumer and his ability to pay for extra interior refinements."

Once the "Magic Home" bubble has been pricked, and the public correctly informed on what it can reasonably expect in greatly improved living conditions, the building industry and its allied interests, will be in the happy position of dealing with enlightened customers. They won't be confused and bewildered by conflicting illusory promises.

It won't be a case of "let's wait and see what happens," but prospective home owners can start planning now to build their practical "dream home," firm in the conviction that the finished product will be up-to-date in every way and the best that money can buy in any price range.

Marshall Appointed Sales Mgr. of Grand Appliance Co.

James Mitchell, president of the Grand Home Appliance Company, Cleveland, Ohio, announced the appointment of W. L. Marshall as Sales Manager. Mr. Marshall comes to Cleveland from Oak Park, Illinois, and has as a background a wealth of experience in selling, merchandising, sales promotion and advertising.

In commenting on the new appointment, President Mitchell said, "Through Mr. Marshall we plan to continue rendering a complete and comprehensive service to all our Grand dealers and distributors."

All sizes up to 3,400 cu. ft. capacity

Meters
Diaphragms
Repairs
Provers
Pumps
Calorimeters
Wet Meters
Gauges
Apparatus

METER REPAIR PARTS

FOR

ALL MAKES — ALL SIZES OF METERS

LARGEST GAS COMPANIES NOW USING OUR PARTS

SEND FOR OUR CIRCULAR ON METER REPAIR PARTS

SAMPLES AND PRICES GLADLY SENT

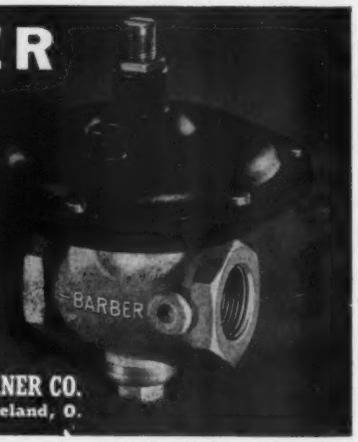
— o —

LAMBERT METER CO.

PLAINFIELD, NEW JERSEY

BARBER

Gas Pressure REGULATORS



Sizes ¼" up

Certified by A. G. A. Testing Laboratory

Write for Prices

THE BARBER GAS BURNER CO.
3704 Superior Ave., Cleveland, O.

FOR ECONOMICAL GAS PURIFICATION

Today's increased demands on the Gas Industry from both the production and home fronts has created many new problems in Gas Purification and sulphur corrosion.

In hundreds of plants throughout the country, Connelly Iron Sponge has not only helped decrease costly sulphur corrosion, but has also materially improved gas purification and lowered the operating and maintenance costs.

If you have a problem in gas purification, it will pay you to consult Connelly. A thorough analysis of your problem and unbiased recommendations will be made without obligation.

CONNELLY IRON SPONGE & GOVERNOR CO.
CHICAGO, ILL. — ELIZABETH, N. J.

New Gas Plant Engine Room at Omaha

By
J. L. Fisher

THIS new engine room at the gas plant of the Metropolitan Utilities District of Omaha, Nebraska, which actually is the nerve center of all Omaha's gas distribution system, was conceived by our own Engineering Department and made into a reality. After this war is won, there will be a great demand for gas and gas appliances. In order that we may be ready to supply this coming demand for gas, this engine room was planned and built to increase the distribution capacity.

The new building is built on the east end of the existing engine room. It is located, speaking from an operational standpoint, in the center of the gas works and is easily accessible from other important points in the plant.

The building, which is forty-eight feet wide by seventy-five feet long by twenty-nine feet to the eaves and forty-nine feet high to the top of the monitor, is of a modern design and is handsomely constructed of brick and structural steel. The structure has an asbestos fire-proof roof. The interior is roomy, well lighted by plenty of large windows and very well ventilated. Two large electric exhaust fans draw air from the building continuously. The eelctric light and power fixtures and switches are of explosion-proof construction, thereby eliminating any explosion hazard. The engine room is connected to all other important stations in the plant by a Tela-Talk communications system.

All gas and steam piping is suspended overhead, making all valves readily seen and accessible. The gas piping is all steel with welded joints and fittings, eliminating the dangers of leakage. All gas valves are Merco-Nordstrom plug type valves which can be easily and quickly operated.

Four existing compressors were moved from the old engine room into the new engine room, and two new machines were purchased for the project. The delivery capacities of the different machines range from 300 MCF to 1,500 MCF of gas per hour if run individually. The two new compressors and the largest of the older compressors are connected to a central control panel.

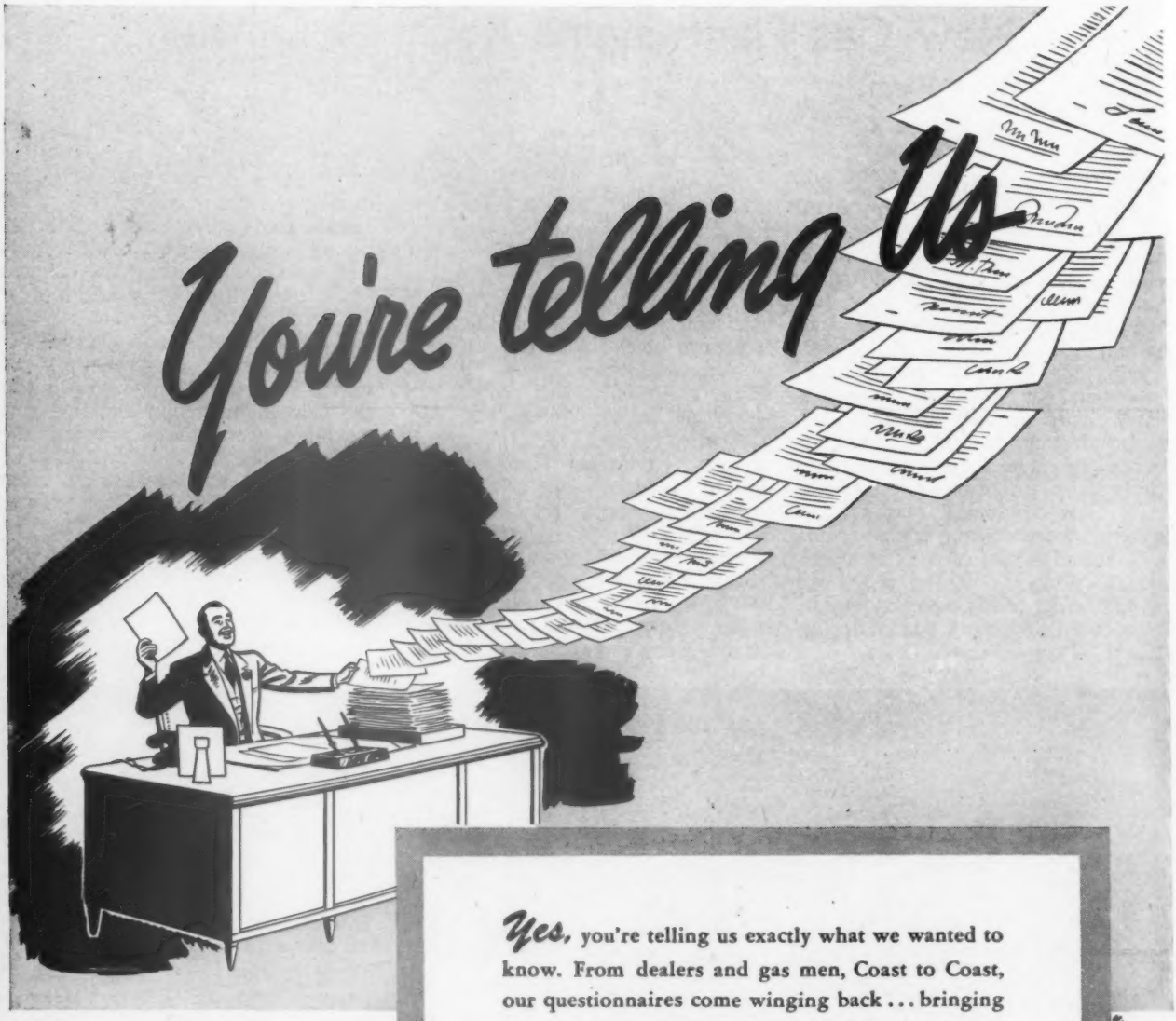
The compressors which are steam

(Concluded on page 48)

On left:—Three steam turbine driven Elliott compressors, each having a capacity of 1,000,000 Cubic feet of free gas against a head of fifteen pounds.

Center background:—Enclosure for three Askania controls on which are mounted most of the Bristol pressure recording gauges and metameter gauges required for the operation of the distribution system.

Right and right background:—One DeLaval compressor, one Rateau-Batta-Smoot compressor (twenty-six years old), and one General Electric compressor, all driven by steam turbines.



Yes, you're telling us exactly what we wanted to know. From dealers and gas men, Coast to Coast, our questionnaires come winging back . . . bringing fact, opinion and guidance. ★ It's all part of PAYNEHEAT'S post-war planning program . . . your assurance that new-model PAYNE Furnaces will be what *you* want to sell . . . what *your customers* want to buy. But meanwhile . . .

AN EXTRA OUNCE OF EFFORT MAY SAVE A BRAVE BOY'S LIFE

For more than two years, we've been working at top speed exclusively on orders from Uncle Sam. And you've been doing *your* part in backing the boys at the front. . . . *Let's not let them down now!*

ARMY (E) NAVY

PAYNEHEAT

30 YEARS OF LEADERSHIP

Payne

ZONE-CONDITIONING

POST-WAR SUCCESSOR TO CENTRAL HEATING

Available when our war job ends: *Clean, healthful, convenient, economical heating and ventilating . . . controlled by zones or individual rooms.* ★ Write for sample copy of new Zone-Conditioning folder, prepared for information of those who intend to remodel or build.

GAS FUEL HAS EVERYTHING

Payne

FURNACE & SUPPLY CO., Inc.
BEVERLY HILLS, CALIFORNIA

THE

AMERICAN GAS-LIGHT JOURNAL.

JOHN B. MURRAY & CO., BANKERS, NO. 40 WALL STREET, NEW YORK CITY,

PROPRIETORS.

No. 1. NEW YORK, FRIDAY, JULY 1, 1859. $3 PER ANNUM. PUBLISHED MONTHLY.

Four Score Years and Five

Is the Uninterrupted Term of Service Rendered the Gas Industry by American Gas Journal 1859-1944

NOW entering its Eighty-sixth year of continuous publication, during which have been recorded the many phases of development in the industry from the early days of illumination by manufactured gas down to the present universal acceptance of Manufactured, Natural and Mixed Gases as the super-fuel for heat and power, American Gas Journal in this brief summary of service, presents for its readers a few abstracts of the highlights bearing on history and development in the industry as recorded in the pages of past issues.

In the aggregate, the gas industry has portrayed a drama of engineering accomplishment of great benefit to industrial and domestic life. To its progress, the Journal has contributed in considerable measure.

Published monthly for the first year and then issued bi-monthly, it later was published weekly and was continued as a weekly until August 1927, when it again became a monthly publication. In its 85 years of service it has never missed an issue.

As of July 1st, 1859, there were 297 gas and light companies in the United States and 8 in Canada. Those companies in the United States had a gross capital of approximately 40 million dollars.

There were only seven companies capitalized at one million or more.

Boston, Mass.	$1,000,000
Brooklyn, N. Y.	2,000,000
Cincinnati, O.	1,000,000
Manhattan Co., N. Y. C.	4,000,000
New Orleans, La.	1,500,000
New York Co., N. Y. C.	1,000,000
Philadelphia, Pa.	3,000,000

147 companies were capitalized at from $10,000 to $90,000, and the other companies at from $100,000 to $800,000 each.

The following is quoted from the first editorial in the Journal.

OUR FIRST SUBSCRIBER

We had the pleasure to receive from the New York Gas-Light Company, at the hands of its President, William W. Fox, Esq., the first application for subscription to the Journal. It was the more gratifying, because it has been intimated that that company, especially, and perhaps the Manhattan, would look with disfavor upon any movement calculated to throw light on what has been considered hitherto a dark monopoly. But it was quite the reverse in both cases; for immediately on mentioning to Mr. Fox our desire for information, he gave it most cheerfully, and promised any further particulars that we might want, expressing, at the same time, his high appreciation of the importance of such a paper to the gas-light interest throughout the country... Mr. C. L. Everett, too, the excellent Secretary, offered in the most courteous manner, to give us such statistics of the company's history as would interest our readers, which he has since done; they are crowded out of this number, but will appear in our next, together with others from Charles Roome, Esq., President of the Manhattan Gas-Light Company, who has placed us under many obligations as well for the matter as for the manner of his favors.

In the August, 1859 issue, the Journal urged the establishment of a Gas Light Association for the State of New York. The constitution and by-laws of the Association were adopted November 16, 1859, and had as its first president, William W. Fox, President of New York Gas Light Company. Incidently Mr. Fox was the first paid subscriber to the Journal.

From the limited use of gas as an illuminant we have seen this phase of its early usefulness yield to electric lighting and in its stead to find other and unbounded applications in the domestic, commercial and industrial fields for heat, power, air conditioning and refrigeration, leading to a far greater prize and contribution to engineering achievement.

These applications have been accompanied by continuous progress in the development of pressure regulating devices, automatic heat controls and regulators and mechanical improvements without end.

There follows an outline of subjects covered and illustrations from some of the early issues.

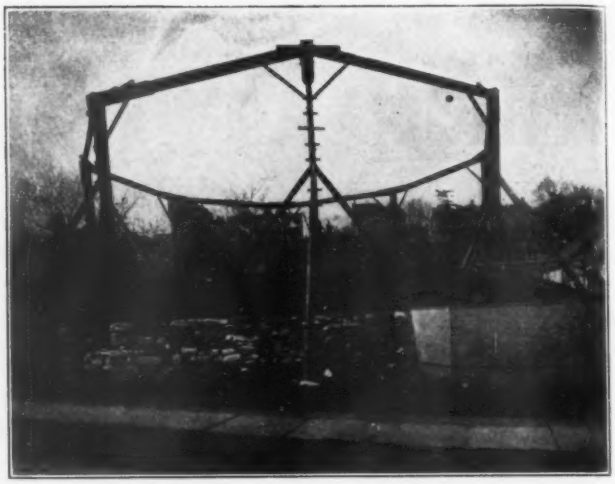
Manufactured Gas

Retorts. In 1820, retorts of fire clay began to make their appearance but did not come into general use until 1859, the year the Journal started publication. The history and development of this type of equipment since that date has been recorded in these columns including horizontal, inclined and vertical types. Intermittent vertical retorts were introduced commercially about 1900 and have been the subject of various articles since that time.

Water Gas. In the July 3rd, 1876 issue was shown the first illustration of the Lowe water gas set in an advertisement of S. A. Stevens & Co., New York and Philadelphia. For several years thereafter there was much discussion pro and con regarding the Lowe process, all of which was printed in the Journal. Since 1889 alterations in the design of this equipment have not been radical though there have been many improvements in mechanical details resulting in increased capacity and efficiency.

All developments in carburetted water gas, oil gas, blue gas and in coke oven design and operation have been set forth in articles during their introduction and operation in this field of engineering.

Condensing, Scrubbing and *Purification* have been the subjects of numerous articles throughout the career of the industry including the advent of the washer cooler and the use of dry and wet purification methods.



A gas holder at Mott Haven, N. Y. in 1860

Storage. On this subject the Journal has presented in word and picture the evolution of installations including water sealed and waterless types as well as the spherical and cylindrical pressure holders. A notable modern installation is the storage spheres and holder of the East Ohio Gas Company at Cleveland for liquefied natural gas described in the issues of January 1943 and June 1944.

Transmission and Distribution

Trenching, pipe line construction and protection, compressor equipment, as well as locations of transmission lines have been featured in numerous articles from the advent of high pressure transmission down to recent activities including underground storage and cycling.

Distribution systems, along with tools and equipment for their construction and maintenance have continually had adequate editorial attention.

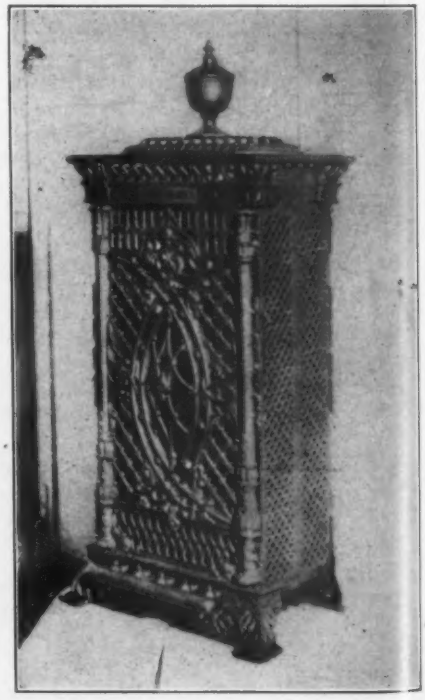
The meter setter of 1860 certainly carried a pack

Natural Gas

While natural gas was first discovered at Fredonia, N. Y. in 1821, and the same year a gas well was drilled to a depth of 27 feet, the first mention of its being used in industry was at Kanawha Valley, W. Va., in 1862 where it was used as a fuel for evaporating the salt water coming from the natural gas wells.

In 1870, the Erie (Pa.) Water Works used natural gas for firing their boilers, claiming a saving of $8.00 to $10.00 per day in fuel costs.

As engineering, production, transmission and utilization of natural gas progressed, the fields of Pennsylvania, Indiana, Ohio, Kentucky, W. Virginia, Oklahoma, Kansas, Texas, Louisiana, Arkansas, Mississippi and California have been subjects of articles in the Journal, culminating in comprehensive articles on the position of the entire industry as of today, appearing in the issues of May and June 1944.



Early and ornate model of a room heater

Meters

The Journal has recorded from its earliest issues, the history and development of the gas meter. Samuel Clegg is usually accredited with being the first inventor of an instrument for measuring gas in 1815. John Malam invented an improved type of meter in 1817 which was of the "wet" type.

During 1884 Richards and Croll patented the "dry" meter,—the forerunner of the meters in use today. The modern consumer's meter, while greatly improved in mechanics and design through the years still operates on the original basic bellows principle as being the acme of accuracy for gas measurement.

Utilization and Sales

The three branches of utilization, —industrial, commercial and domestic,—each have been continuously promoted by timely articles of unusual interest.

Successful sales and advertising campaigns, generously featured in articles up to the close of 1941 now concern themselves largely with post-war plans which are being expressed in detail.

Believe it or not, this is a great grandfather of a modern gas range on the right

D. McDONALD & CO.,

No. 51 LANCASTER STREET, ALBANY, N. Y.

MANUFACTURER OF

Station Meters, Wet Meters (with Iron or Tin Cases,) Dry Meters, Fancy, Experimental and Show Meters, Gas-Holders for Testing Meters, Pressure Guages, &c., &c.

We wish to call the attention of Gas-Light Companies, Gas Engineers, and all others who contemplate the purchase of Gas Meters, to the fact that we are now manufacturing, and prepared to fill all orders in the above line upon terms as favorable as any other manufacturers in the country.

Having improved, simplified, and so far perfected the mechanical construction of our Meters as to render them unquestionably equal, if not superior to any others now in use, we can confidently offer them to purchasers as such. The extreme simplicity of our Dry Meters renders their wear and liability to get out of order, less than any other Meter in the market. First-class workmen only employed, and the best materials used. All work warranted. ☞ Meters sealed by the State Inspector, according to the laws of New York.

This meter advertisement appeared in the Journal during 1860

Appliances

These also enter to a large extent into the post-war picture. The record of their development for domestic and commercial cooking, water heating, room and central heating and for refrigeration is reflected throughout many articles and items that have appeared in the Journal for the last half century. In the issue of September 17th, 1877 appeared this editorial.

"So strong is the popular demand for gas as a fuel, that the manufacture of gas stoves is fast becoming one of the industries of the country. It needs but the cordial and sympathetic co-operation of the manufacturers of gas to work a common good to all concerned. When the gas stove manufacturer, the gas company, and the people are hand in hand in their efforts to bring about the use of gas as a fuel, then will be realized what should have existed long since—the economical and effective transportation of light and heat to every house within the reach of a gas main."

The approximate figures for 1943 present an impressive exposition of expansion of the industry since the advent of gas lighting in its early days.

The Manufactured Gas industry now has upwards of 10,700,000 customers divided as follows:

Domestic	9,838,000
House Heating	419,000
Commercial	395,000
Industrial	34,000
Miscellaneous	10,000

Total gas sales 481,772,000 MC.F.

Revenue $438,655,000

The Natural Gas estimates of customers as of 1943 are expressed as follows:

Domestic (incl. House Heating)	8,118,000
Commercial	584,000
Industrial	52,000

Total gas sales in this field reach these huge figures expressed in M.C.F.

Domestic	505,488,000
Commercial	163,699,000
Industrial	1,019,617,000
Electric Generation	294,683,000
Revenue	$633,195,000

Today there are installed upwards of 18 million gas ranges several millions of which are liable to replacement with modern types.

One of the new model ranges now made under O.P.A. regulations

PROTECTING FINE EQUIPMENT

FOR ANOTHER REPEAT ORDER CUSTOMER

At this, one of several compressor stations operated by the same Company, they now have ten Blaw-Knox Gas Cleaners in service. These highly efficient scrubbers are catching dust, rust, sand, scale and also condensates. Thus the company is protecting its fine compressors, insuring continuous service, saving money and worry. Altogether they have bought 32 Blaw-Knox Gas Cleaners for thorough protection. Write for the bulletin: — "A Picture Book about Blaw-Knox Gas Cleaners" No. 1869.

REPEAT ORDERS TELL STORY

Of the many Companies who have purchased Blaw-Knox Gas Cleaners the following are of especial interest:

4 Companies placed 5 repeat orders for total of 36 units
1 Company placed 6 repeat orders for total of 9 units
1 Company placed 7 repeat orders for total of 11 units
3 Companies placed 9 repeat orders for total of 87 units
1 Company placed 12 repeat orders for total of 32 units
1 Company placed 14 repeat orders for total of 21 units
2 Companies placed 15 repeat orders for total of 37 units
1 Company placed 19 repeat orders for total of 37 units
1 Company placed 20 repeat orders for total of 39 units
1 Company placed 22 repeat orders for total of 43 units
1 Company placed 32 repeat orders for total of 50 units
1 Company placed 40 repeat orders for total of 61 units

BLAW-KNOX DIVISION
OF BLAW-KNOX COMPANY
FARMERS BANK BUILDING
PITTSBURGH, PA.

BLAW-KNOX GAS CLEANERS

Cycling in Louisiana

By
R. L. Keyes

Assistant Division Manager,
Producing Department,
The Texas Company,
New Orleans.

CYCLING is playing an important role in the war effort furnishing raw products for 100 Octane Aviation Gasoline and synthetic rubber. New cycling projects have consistently received high priority ratings and have been encouraged and expedited by PAW due to the high yield of vital products per ton of steel used.

Introduction

The first cycling plants were built in Texas in 1938, and during the succeeding two years cycling operations were confined to that state where success of the first projects led to the installation of a large number of plants in 1939 and 1940.

Development of cycling in Louisiana lagged behind Texas due in part to the difficulties incident to unitization and the fact that most of the state's gas-distillate reservoirs were at greater depth requiring higher pressures for gas injection.

While Louisiana did not have a cycling plant in operation until 1941, a high pressure, field- stabilization and pressure-maintenance plant was built by the Continental Oil Company in the Tepstate Oil Field in 1936, about two years before the first cycling plants in Texas. This was the first operation of this kind and its success encouraged Continental to install a pressure maintenance plant at Ville Platte in 1940 which is the largest high pressure project involving pressure maintenance in the Petroleum and Natural Gasoline Industry.

The first large cycling project involving unitization of all the gas condensate reserves of an entire field was in Louisiana. Likewise, Louisiana was the first state to enact a law providing, among other things, for the unitization of gas and gas-distillate reserves on a field wide basis. Following the adoption of this law and due in a large part to the progressive and enlightened attitude of those officials charged with the administration of this law, Louisiana has been out in front among the states in promoting conservation of gas and gas-distillate reserves through unitization and unit operation.

Definition

Cycling, sometimes referred to as recycling, is the Primary Recovery Operation by which "Condensate" commonly called "Distillate" is separated or extracted from high pressure gas and the residue gas then compressed and returned to the formation. This method of production is applicable to and necessary in reservoirs where the hydrocarbons present exist in a single vapor phase in order to maintain the formation pressure and prevent condensation and resultant loss of liquid hydrocarbons in the reservoir.

While "pressure maintenance" is an integral part of cycling, the term "Pressure Maintenance" is used also and more generally to cover operations involving oil reservoirs and it is not proposed to consider in this paper either "Pressure Maintenance" of oil horizons or the recycling of gas in Secondary Recovery Operations but to discuss only operations involving high presure gas-distillate reservoirs.

At ordinary temperatures and pressures up to 500 or 600 p.s.i., mixtures of gas and liquid vapors tend to condense with increasing pressure and this fact was utilized in the early "Compression" natural gasoline extraction plants. At higher pressures, however, the reverse is true and condensation takes place in increasing amounts with a reduction in pressure and this is termed "Retrograde Condensation."

The phenomena of retrograde condensation have been known and recognized in the laboratory for nearly seventy years and some of the effects were noticed in producing gas at high pressures as early as 1930, but it is only in the last six years that direct application of these phenomena have been used in extracting condensate and cycling of high pressure gas reservoirs.

It is not proposed to discuss in detail the behavior of mixtures of hydrocarbons in the Retrograde Range as there have been numerous technical articles published on this subject during the past few years. However, it is now generally accepted by engineers and operators having experience with cycling that in most high pressure gas-distillate zones the formation pressure is at or close to the "dew point" and that any material reduction of this pressure will cause liquid to condense in the formation, a large part of which will become unrecoverable. In early distillate recovery operations where the formation pressure was permitted to decline, it was noticed that there was a gradual and steady increase in the gas-liquid ratio and this fact, finally explained by retrograde condensation, led to the adoption of pressure maintenance and cycling.

Types of Plants

There are three main types of processing plants used in cycling. The first installations involved only simple separation, utilizing the principles of retrograde condensation to extract the condensate by reduction in pressure. The second type involves the addition of some means of cooling the gas. In the retrograde range, the amount of condensation at a given pressure increases with a decrease in temperature so extraction efficiencies were improved by installing plants involving simple separation with the addition of a refrigeration cycle to reduce the temperature of the wet gas ahead of the separator.

The third type of plant utilized high pressure absorption to extract the condensate, and plants of this type obtain higher extraction efficiencies than either of the other two. In addition to higher efficiency, this type plant has the added advantage of requiring less compressor horsepower for injection of residue gas due to higher suction pressures. All large plants installed recently have been of the high pressure absorption type.

Conservation

Cycling, providing as it does for maximum recovery of products from the reservoir and prevention of surface and underground waste, is the highest type of conservation. It is estimated that with a well planned efficient cycling operation, seventy per cent or better of the hydrocarbons in the reservoir can be recovered which is more than double what would normally be recovered if the field were produced in a conventional manner without cycling. In addition the dry gas returned to the formation will be available at a later date, and it will be possible to utilize it to the best advantage and in the

highest possible way. The market and use to which the gas will be put can be developed as and when desired as there is no need to produce it until it is advantageous to do so.

Careful consideration must be given to the arrangement or spacing of wells in a cycling project if maximum recovery is to be obtained. The proper location of injection and producing wells depends on the shape, size, and structure of the reservoir. This requires an accurate and detailed knowledge of the subsurface or reservoir conditions. In general, injection wells should be as far as possible from the producing wells and both injection and producing wells uniformly spaced with regard to the volume of reservoir space so that the dry gas will advance uniformly sweeping out or displacing to the producing wells a maximum of reservoir or wet gas without channeling of the dry gas and with a minimum of interference. An ideal reservoir for cycling is one consisting of a homogenous sand with uniformly high porosity and permeability existing as a blanket over the structure and unbroken by faults.

Unitization

It should be obvious that, for efficient operation including proper spacing of wells to insure maximum recovery, a cycling project should be operated as a unit without regard to property lines. A haphazard arrangement of wells or competitive operations will only result in premature channelling of gas, by-passing of wet gas reserves, and a loss of recoverable products. Therefore, in order to protect the correlative rights and provide for the equitable participation of all parties, some form of unitilization must be obtained.

Where there are many diversified ownerships, the legal work connected with unitization is highly involved, difficult, and seemingly endless. Voluntary cooperation in a unit plan is always difficult of achievement where there are large numbers of interested parties, due to various reasons such as the lack of a true understanding of the problems involved, of the benefits to be obtained, and various items of self interest. Most oil producing states have statutes based on conservation of oil and gas resources, regulating and controlling production including pooling of acreage in drilling units. It therefore would appear that the states clearly have the power to effect field wide unit operation and cycling of gas condensate reservoirs based on prevention of waste and to protect the correlative rights of mineral owners. The State of Louisiana passed such a law in 1940 and several condensate fields have since been unitized and cycling projects placed in operation under the provisions of this law.

As an example of the difficulty and inequity involved, where there is no statute that can be used to force unitization, the following is cited:

The operators in a condensate field (not in Louisiana) have been attempting for four years to unitize in order to build a plant to efficiently cycle the gas and recover the liquid products. All the operators, with one exception, reached an agreement in regard to unitizing the field and building a cycling plant. However, this one operator owning less than 20% has successfully blocked the unitization for this period and in addition, during this time, he has produced about 15% of the total field reserves through separators at the well, recovered inefficiently the distillate and selling some of the gas at no profit. There has already been a considerable decrease in formation pressure and it is estimated that in addition to inefficient recovery of liquid from the gas and waste and inferior utilization of the gas, there has been over a million barrels condensed

(Concluded on page 48)

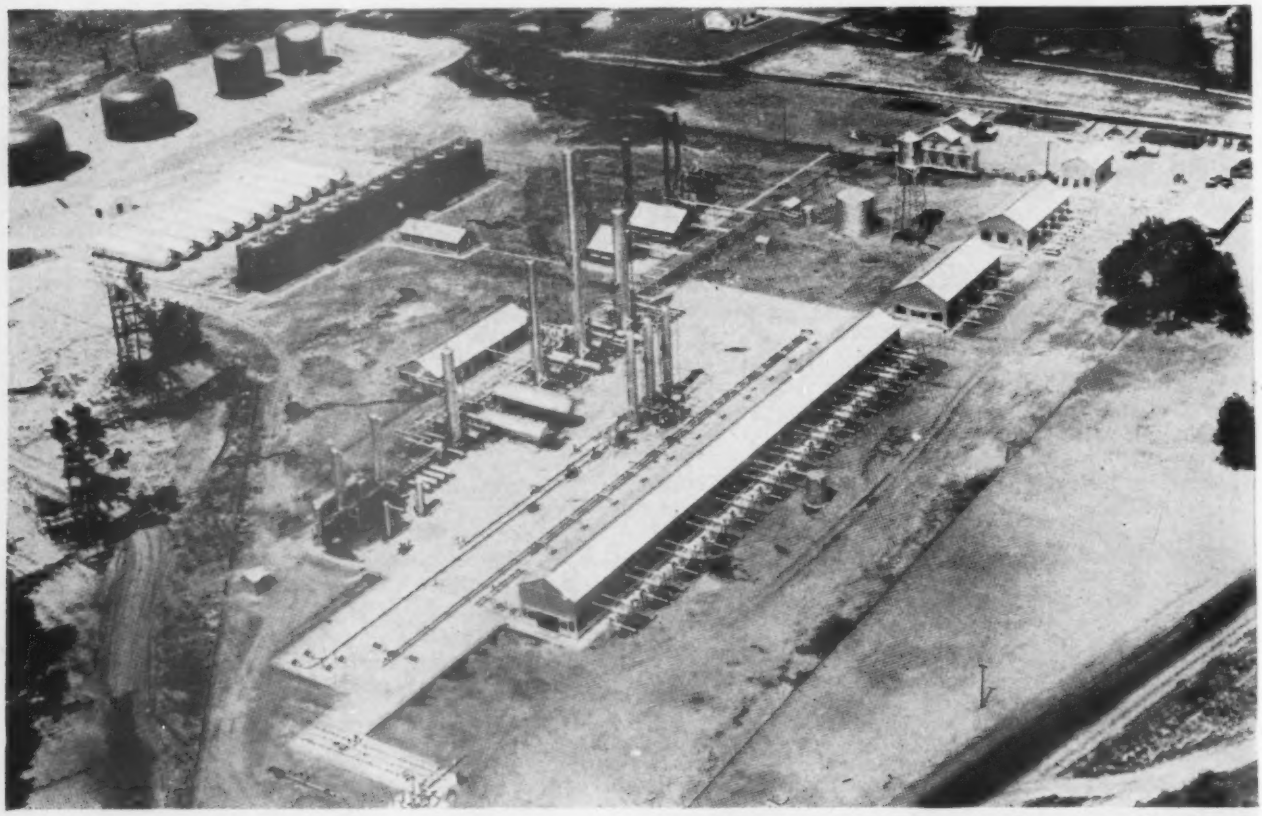


Photo courtesy Clark Bros. Co.

The Cotton Valley Cycling and Pressure Maintenance Plant. Placed in operation in July 1941, processing 150 million cubic feet of gas by absorbing at 1500 # and returning the residue gas to the formation after compressing to 3200 #.

The Post-War Range Survey in Northern Illinois

The "typical" northern Illinois housewife wants to cook her postwar meals on a "table top" range with four standard top burners on the left side, a smooth work space on the right side, a right hand waist-high oven 14 inches high, 19 inches deep and 16 inches wide (big enough for a fifteen pound turkey), a left hand waist-high broiler which swings out, two storage drawers for utensils below, automatic pilot equipment (no matches), and a dozen or so gadgets for convenience and performance. And she expects to pay from $100 to $150 for it installed in her kitchen.

This was revealed in a public opinion poll of a cross-section of northern Illinois housewives recently completed by the Public Service Company of Northern Illinois, the Western United Gas and Electric Company, and the Illinois Northern Utilities Company, which serve gas and electric to hundreds of cities, towns, and farms reaching from Chicago's suburbs to the Mississippi River.

And, if this "typical" housewife is going to cough up over a hundred dollars for her postwar range, here are some of the gadgets the manufacturer will have to incorporate in his product if he wants to keep sales resistance at a minimum: a window in the oven door, an automatic electric light in both oven and broiler, complete thermostatic and time controls, an oven regulator, a chime control and minute minder, summer burners, and an electric clock and condiment set to match.

To come a little closer to satisfying this "typical" housewife, the research engineers will have to speed up the oven pre-heating, provide uniform oven heat, and make all the cooking parts—particularly the oven—easier to clean.

To complete the job, they will have to add a cover for the top burners, a built-in deep-well cooker, a toe space in the front base, and a cooking top of stainless steel, chrome, or some other special metal for easier cleaning.

After the manufacturer has done all this, he shouldn't have too much trouble selling his product, the survey indicated. The ranges now in use throughout the three-company territory average nearly fifteen years in age.

ESTATE POSTWAR PROFIT JINGLES:

You can't please everybody

1

Mrs. Muriel Jones
and her husband *Chas.*
Are completely sold
on cooking with *gas*

2

While you could argue
yourself quite apoplectic
And the *Browns* would still
want a range, *electric*

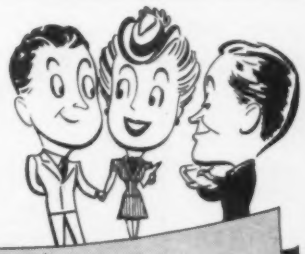
3

When the *Briggs* buy a heater,
they've made up their mind
It's going to be *oil*
—and no other kind

4

Yet you'd steer your sale
to the *Cranes* on a shoal
If you talked any kind
of a heater but *coal*

In postwar selling, here's what to do—
Agree with 'em all when they come to you



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. . . GET INTO THE SALE

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ESTATE

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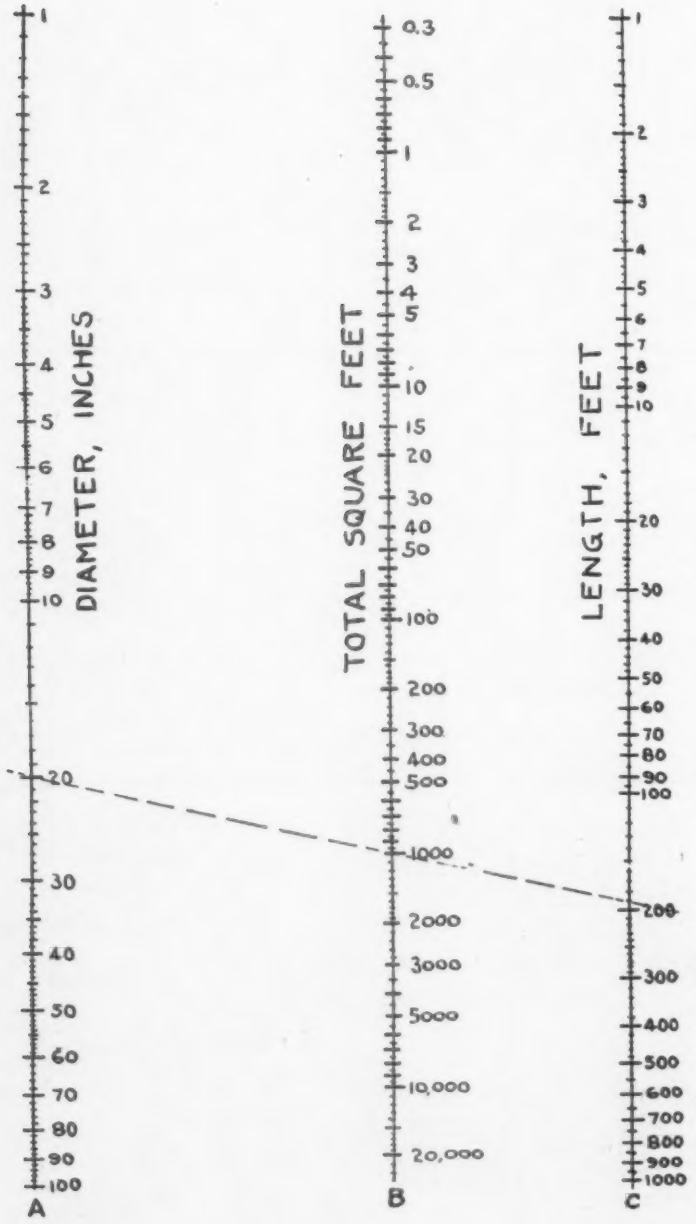
Heatrolas

for coal, wood, oil

Remember the popular song called "Jenny Made Her Mind Up"? There are lots of Jennys. They know what they want when it comes to buying an appliance. If they want a gas range, *they want a gas range.* If their minds are set on electric, a 50,000 volt argument won't change them. Same with heaters. Some want coal. Some want oil. But they want what they want. And you'll have what they want—with Estate after the war. For Estate is the complete line of cooking and heating appliances for *all* fuels sold under one famous, nationally known trade name. Good time to talk to your distributor about it. Want his name? Write us.

THE ESTATE STOVE COMPANY, HAMILTON, OHIO, *Established 1842*

The Area of Any Curved Cylindrical Surface



By
W. F. Schaphorst, M.E.,

THIS chart is applicable to pipes, tubes, ducts, tanks, etc. For example, the dotted line drawn across the chart shows that if the diameter of the cylinder, pipe, tube, tanks, or what not, is 20 inches, column A, and the length is 191 feet, column C, the total area is 1000 square feet, column B.

The chart covers a wide range—from 1 to 100 inches in diameter and from 1 to 1000 ft. length. But it can be applied to any diameter or length, as follows: Let us suppose that you want to build a vertical tank of any material, 200 inches in diameter and 191 ft. high. What will be the area? Those figures have been chosen purposely to show that the same dotted line already drawn across this chart can be used to solve the problem. The answer will be 10,000 sq. ft. instead of 1000 sq. ft. for reasons that are obvious.

In other words, if you add a cipher to the figures in column A you must also add a cipher to the answer in column B. If you add 2 ciphers in column A you also add 2 ciphers in B. And so on. The same is true of column C. To make sure that everything is understood let us add 2 ciphers to the 20 in. column A, making the diameter 2,000 inches. And let us add 2 ciphers to the 191 in C making the height 19,000 feet. The number of square feet will then be 10,000,000 because we must add a total of 4 ciphers to the figure in column B.

Note, please, that the tank just computed would be rather gigantic—nearly 4 miles high, and about 165 feet in diameter. It has been included here only to demonstrate that the chart really has no limit of application. It will be found handy for estimating and for checking one's "hand figuring" should it be decided that utmost accuracy is wanted.

The chart will therefore be found useful for determining the area of any cylindrical structure of any kind or size. It can also be used to advantage in reverse. For example if you want 1000 sq. ft. of surface, column B, and if the diameter must be 20 inches column A, the same dotted line tells you that the length must be 191 feet, column C.

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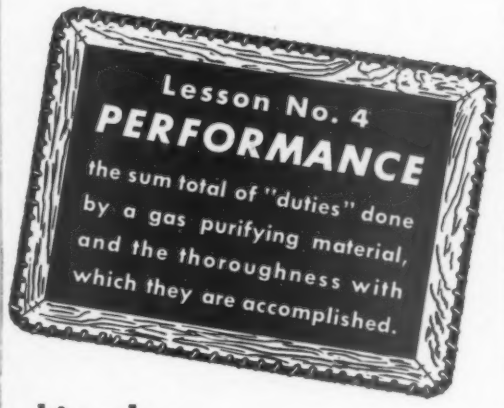
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- High Pressure Line Regulators Pilot Loaded—Pilot Controlled
- Toggle Type Regulators. Single Valve, Double Valve, Triple Outlet
- Seals: Dead Weight or Mercury
- Relief Valves: High or Low Pressure
- Back Pressure Valves. Automatic Quick-Closing Anti-Vacuum Valves
- Automatic Shut-off Valves
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- Louver Operated Device
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GAS CONTROL SINCE 1892

RECENT COURT DECISIONS *Affecting Gas Utilities*

Avoid Legal Pitfalls

By
Leo T. Parker
Attorney at Law
Cincinnati, Ohio

USING HIGHER court decisions as a basis for investigation, it is evident that a great majority of damage suits filed against gas companies involve explosions of gas. Therefore, in this article we shall review leading and late higher court decisions which illustrate "pitfalls" resulting in gas companies being held liable for the damage caused by explosions of gas. We shall, also, offer suggestions, based upon these higher court decisions, as to how such "pitfalls" may be avoided thereby saving the gas industry a considerable sum annually.

First, we shall consider cases in which gas companies have been held liable because of failure of officials and employes to act with diligence and certainty after receiving notification of escaping gas. Modern higher courts consistently hold that a gas company is liable in damages for injuries caused by escaping gas if the testimony proves that the gas escaped through negligence or lack of ordinary care, of the company's employes, or if the testimony indicates that the gas company failed to exercise ordinary care to discover and stop a leak after receiving notification that gas is escaping. And some courts have held that knowledge of "likelihood" of gas escape is sufficient to result in the company being liable where the testimony shows that it failed to make necessary repairs.

For example, in Alexandria, 16 Ind. App. 534, it was shown that gas company officials had knowledge of the imperfect condition of its pipes. The higher court held that it was not necessary for the injured person to prove that the company officials *knew* that gas was escaping, since from the condition of the pipes the gas company employes were legally obligated to *know* that gas would *not* escape. See, also, Dow v. Winnipesaukee Gas Company, 69 N. H. 312; and 42 L. R. A. 569, to the same legal effect.

As above explained, knowledge that gas is escaping is a positive basis for liability. See Richmond, 197 S. E. 416, where a property owner notified a gas company that she smelled gas. The company sent an employe to investigate. Upon his arrival he discovered that the gas was leaking from the end of a pipe. In a later suit he testified that he cut off the gas at the sidewalk, removed the section of the pipe containing the inside valve, and placed a cap on the end of the pipe. He notified the property owner and also filed with the Gas Department a written report stating that the leak had been discovered and corrected. However, an explosion occurred soon afterward. In the subsequent suit the higher court held the gas company liable and said that where a gas company employe fails to locate escaping gas and reports to the property owner or gas company that such leak was discovered and repaired the liability of the company is positive, in the event an explosion occurred.

So, therefore, it is advisable, in view of this higher court decision, for gas company inspectors and employes to *not* make a positive statement to the property owner or consumer that he discovered and eliminated the leak. It is considerably to the advantage of the gas company, in the event an explosion may occur, for the employe to state that he has made a diligent effort to repair the leak but that "nothing in this world is certain." And he may suggest to the consumer that he make intermittent inspections and promptly notify the company if escaping gas is detected. In this manner the gas company does not assume full and complete responsibility that the leak is stopped. In other words, a duty is shouldered onto the consumer to use reasonable care to *know* that the leak has been corrected. Moreover, there is little doubt but that in many past explosions suits of this nature exact but unobtainable evidence may have proven that the exploded gas leaked from a source *other* than the originally reported and repaired leak. The important point is that when a gas company employe notifies a consumer that a gas leak *is* repaired, the consumer naturally and confidentially relies upon this advice and although he may actually detect gas, after the gas company employe leaves, he may fail to report this fact. Thus the gas company officials have no further opportunity to make repairs designed to prevent gas explosions and avoid resultant damage suits and, further, the ultimate testimony is completely and finally in favor of the consumer.

For illustration, in Southern Gas Company v. Tyner, 49 Ind. App. 475, the higher court held that if a gas company employe undertakes to find and repair a leak, and he fails to repair the leak or negligently repairs it then the company is liable for resultant damages *if* the company continues to furnish gas through such defective pipes.

And again, in Lynchburg Gas Company v. Sale, 160 Va. 783, the higher court held a gas company liable for turning its gas into a pipe where the employee failed to take the necessary precautions to ascertain that the end of the pipe was uncapped and open.

Rule of Inspection

Practically the same rules of law are applicable where a company undertakes to inspect a gas consumer's equipment and informs the consumer that it is safe to use.

In other words, modern higher courts hold that if a gas company official orders an employe to inspect service pipes, gas fixtures or appliances the gas company assumes liability for injury to person or property caused by negligence of the employe who carelessly made the inspection or failed to remedy the accessory which subsequently caused the injury, providing the consumer was definitely assured that it was safe to use the gas.

If a gas company does not own or control gas pipes or appliances its employes are not obliged to inspect them. Therefore, the company is not liable for damages caused by such defective mains or pipes and appliances, providing its employes did not inspect and approve them. On the other hand, when the company controls fully or jointly the mains, pipes, or appliances the company must use "reasonable" care to keep same in a safe condition.

See Sutcliffe v. Fort Gas Company, 257 N. W. 406. In this case it was shown that a gas meter was located in close proximinity to a wall through which the gas main entered the basement. Connected with the gas meter was an obsolete and unused pipe, to which was connected the gas pipe coming through the basement wall.

One day an explosion occurred in the building resulting in serious injuries and damage. Suit was filed against the gas company for damages.

The testimony proved that the gas company employes had inspected and approved these appliances from time to time, and, therefore, the higher court held the gas company liable. This court said that although the gas company did not own the gas appliance in question, its employes had full control over them which resulted in the company being liable for the explosion.

At this point it is advisable to explain, and cite higher court decisions in verification of the explanation, that gas company employes are under obligation to inspect, correct or give advice to a gas consumer regarding his own accessories or appliances. However, a gas company is not required by law to notify consumers of dangers of which the ordinary prudent and careful consumer actually should be aware.

See the leading case of Cardogan v. Boston Gas Company, 195 N. E. 772, where the testimony disclosed that a property owner installed in his house a conventional water heater which contained a metal coil through which the water ran and upon which the gas flame played to heat the water. The water heater was permitted by the consumer to burn for several hours, and carbon monoxide escaped. Three persons were overcome by the fumes because no vent pipe was connected with the chimney. Suit was filed against the gas company to recover damages on the grounds that the gas company employes were negligent in failing to notify the consumer of dangers associated with carbon monoxide gas. Although the gas supplied by the company contained 25% of carbon monoxide, the higher court refused to hold the company liable and said:

". . . Where the company supplying the gas has undertaken no responsibility wtih respect to the appliances within the house or the method of using the gas in them, we think that there is no duty on its part to warn the consumer with whom it deals, of the dangers attendant upon the burning of gas."

The legal effect of this decision clearly supports the previous explanations that a real "pitfall" arises when a gas company employe attempts to repair, explain operations, adjust, or otherwise assure a consumer that it is safe to use an appliance or turn on gas. Silence on the part of the employe may avoid liability and eliminate explosions because, as the above court held, a consumer is likely to exercise care to protect himself if he has not been assured by a gas company employe that "everything is O.K."

See Oakland v. Pacific Gas and Electric Company, 47, Cal. App. (2d) 444, where it was shown that a gas company was serving gas from a main supply line located in the street through a meter located in the basement of the building in question. At a point beyond the meter and on the customer's side a leak occurred causing the damage.

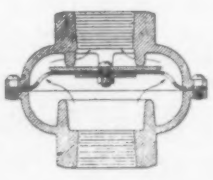
The higher court clearly explained that where a gas company owns and maintains only a portion of the pipes and appliances, there can be no liability unless the consumer proves conclusively that the damage resulted from negligence on the part of the gas company officials or employes.

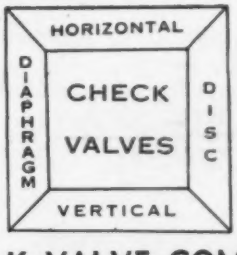
Consumer Responsibility

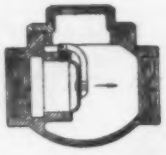
It is not always advisable to place responsibility on a gas consumer to know that his lines and appliances are safe, yet the gas company may require him to employ a plumber to make a check. The courts have established the legal rule that if a gas company employe turns gas into a meter when he has actual knowledge or reasonable ground to believe that the house fixtures are in any manner defective, he is negligent and the company is liable for resultant injuries to persons and property.

Therefore, all gas company officials will find it advantageous, and a source of damage suit elimination, to supply all gas company employes with *printed* instructions regarding their legal duties based upon the above explanations of the modern law on this subject. Moreover, evidence in a court that such printed instructions were issued to all gas company employes may importantly assist in winning suits. This is so because many higher courts have held that employers are not liable in damages for injuries resulting from their failure of employes to obey instructions. Under such circumstances it may be held that the gas company employe was acting "outside the scope of the employment" when he performed the act or made a statement which contributed to occurrence of the explosion.

Pressure Controls for Gas and Air







NORWALK VALVE COMPANY

85 Spring St. South Norwalk, Conn.

Baker Finds New Gas-fired Oven Saves Labor and Money

By
John E. Hubel

IN ILLINOIS and Wisconsin, when visiting a bakery to learn what kind of fuel is used for the ovens, it seems to be safe to say that more than 90 per cent of those who no longer use coke or soft coal for that purpose, now have modern gas-fired ovens installed.

In one bakery—the Superior Bakery in Milwaukee—the Pirolo family had become so accustomed to the slow work the soft-coal-fired oven had been doing for years, that they were reluctant to change to a gas-fired one when the time came for modernization of the bake shop and the store. After visiting other bakeries, Pirolo finally consented to have a gas-fired oven installed in the new bakery when it was started early in 1941. A careful check was kept by this baker for more than nine months to see if the gas consumption would be too great for his business to stand. To his surprise, the total gas bill has been averaging about $25 per month for the large gas-fired bake oven as well as for heating water for general purposes around the bakery and home and for the bath.

This baker reports having the output efficiency doubled since the gas oven was installed and it is really cheaper to operate, Mrs. Pirolo says, for you do not have to have an extra helper watch the fire as was the case with the soft coal oven. The extra helper was not discharged, but makes himself useful in handling the greater output from the gas-fired oven. As there are straight continuous runs of bread, variety goods and everything from rye bread to custard pies and lady fingers. With the use of soft coal, the baker says, once the fire is started, you could not regulate the heat to suit various kinds of baked goods, but with the automatic regulation that comes with the Middle-Marshall gas-fired ovens you do not have to watch the oven every minute while it is in operation.

Gas Fired Oven with revolving trays. Gas water heater at left background.

According to Mrs. Pirolo, it only takes a couple of hours to bake the entire batches of various kinds of bread, cake, pies, rolls, etc., and the baker is through with the work before you believe he has been fairly started with the day's baking.

The baker himself puts the responsibility for the larger output of the new oven to the revolving trays,

Although this correspondent does not know much about baking, he was asked to appreciate the stabilizers used on the revolving trays in this oven, which, the baker said, makes the trays vibrationless as they turn on the reel, and this, he claimed, cannot result in uneven cakes or split pies. He showed that the trays were practically as firm as a stationary baking hearth. The oven has six revolving trays, three pans each.

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For Sound Values and Continuous Operating Economy

Meters for Domestic and Industrial Use. All Sizes 5B to 60C.
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Write for details and quotations

SUPERIOR METER COMPANY, INC.
167 41st Street ***Brooklyn, N. Y.***

News of the Gas Industry

Public Utility Motor Vehicles Conference

More than 50 public utility transportation executives attended the 1944 conference held June 27th, at Philadelphia, Pa.

E. W. Jahn, Baltimore, Md., chairman of the A.G.A. Technical Section's Committee on Motor Vehicles, presided.

Linn Edsall, Phila. Elec. Co., stressed "Safety Through Proper Driving Procedure," and stated that he feels few drivers have been properly grounded in the fundamentals of automobile operation. He presented two typical methods of training—one making use of group training methods, and the other dealing with individual drivers. He feels that individual specialized instruction is to be preferred, but when large numbers of men are to be trained quickly the use of group training is necessary.

"Air Compressors and their Application to the Gas Industry" was discussed by C. T. Chapman, manager, Ingersoll-Rand Co., Phila. He used slides to illustrate the subject. He traced the development of the use of compressed air and its importance to the industry.

P. T. Dashiell, vice president, Phila. Gas Works Co., was the speaker at the general luncheon, and reviewed the establishment of the Motor Vehicle Committee, its work and its value to the gas industry.

The afternoon session was in charge of B. D. Connor, Jamaica Plain, Mass.

Using a 25-minute film, A. A. Brainerd, Philadelphia Electric Co., Philadelphia, Pa., considered "Three-Dimensional Seeing." Shop lighting was given special emphasis by the speaker, particularly auto repair shop lighting. The film shown was prepared as an outgrowth of the need for improving visibility in industry and was first developed for producing better seeing conditions in machine shops in Philadelphia.

Speaking on the subject of "Economics of Standardization," Sidney F. Gale, sales manager, American Coach and Body Co., Cleveland, Ohio, treated standard body design for various utility applications, future developments and new materials.

Atlanta Gas Light Co. Receives O.C.D. Award

The National Security Award of the United States Office of Civilian Defense was presented to Atlanta Gas Light Company at a gathering of employees and their families, at the Gas Company Service Building in Atlanta, Georgia, on June 29.

Declaring that, "You have guarded against accidents, fire and sabotage; you have prepared for action in the event of enemy attack, and you have taken steps to anticipate all the war emergencies which might have confronted you," Maj. General Frederick E. Uhl, commanding officer, Fourth Service Command, congratulated the company and its employees on their achievements and the spirit with which they had carried out their work.

Atlanta Gas Light Company's President, H. Carl Wolf, receives National Security Award from Jerome A. Connor, regional director of OCD.

Jerome A. Connor, regional director of the Office of Civilian Defense, presented the award to H. Carl Wolf, president, on behalf of the OCD, and Mr. Wolf in turn presented token award insignias to selected representatives of the Company's plant protection force.

In accepting the award, Mr. Wolf pointed out that with the lighting of 50 gas street lamps in Atlanta on Christmas Day, 1855, the Atlanta Gas Light Company started a service to the community that has suffered only one interruption in the better part of a century that has passed—and that was following the Battle of Atlanta when Atlanta was burned and the gas plant itself destroyed.

"As Atlanta's oldest corporation," he said, "what we are proud of in the designation of our Company to receive the National Security Award is that it typifies the willingness and real concern of our employees to safeguard our service to our customers."

The Atlanta Gas Light Company was the first concern in Atlanta designated to receive the National Security Award.

CONVENTION CALENDAR

September

13-14 *Pacific Coast Gas Association,* Annual Meeting, Ambassador Hotel, Los Angeles.

October

3-5 *National Safety Congress,* Hotel Sherman, Chicago.

5-6 *American Gas Association,* 26th Annual Meeting, Hotel Stevens, Chicago.

23-24 *A.S.M.E. Fuels and Coal Divisions,* Joint Meeting, Charleston, W. Va.

November

13-16 *American Petroleum Institute,* Annual Meeting, Hotel Stevens, Chicago.

15-19 *Third National Chemical Exposition,* Coliseum, Chicago.

Portland Gas & Coke Co. Features CP Range

Initiating a series of three color full page advertisements presented to their public through the Sunday magazine sections of local dailies, Portland Gas & Coke Company puts accent in July issues on some outstanding features of the CP Range.

On a blue print and range illustration is superimposed a sketch in memorandum form designating the characteristics and accessories of the unit shown and which are described in the body text.

The title reads, "Are your range ideas ahead of the times? So are ours!"

A featured footline says, "Buy war bonds now,—a beautiful CP gas range after the war."

Gas Water Heater Installations Subject to City Ordinance

In accordance with an order issued by the Los Angeles Building and Safety Department, effective August 1, installers of gas water heaters in the city of Los Angeles must subscribe to the provisions of a municipal ordinance which makes mandatory the use only of approved gas water heater which meet standards specified in the ordnance.

Some six months after the measure regulating water heater installers was passed in August, 1943, it was found that strict enforcement of the provisions would entail considerable loss to heating and plumbing contractors and master gas fitters whose stockrooms were filled with gas water heaters acquired before the ordinance was enacted, which failed to meet the new requirements. The Board of Building & Safety, therefore, on February 4, 1944, granted an extension of six months time in which such parties could dispose of stocks of unlabeled, rebuilt and reconditioned gas water heaters on hand.

With the period of grace expiring on August 1, installers of gas water heaters must now adhere strictly to the terms of the ordinance. The measure provides that every water heater using gas as fuel shall conform to the approval requirements for gas water heaters of the American Standards Association Z 21.10—1935, Z 21.10—1937, Z 21.10—1938 or Z 21.10—1941. It also provides that every such water heater must bear an approved label certifying that the heater conforms to the requirements.

All gas water heaters installed in Los Angeles after August 1 must also comply with venting requirements set forth in the ordinance. These demand that every heater have a separate vent conforming to specifications set forth in the Los Angeles Municipal Code, excepting that not more than four gas water heaters may be connected to a common vent if constructed and installed as required by that section.

The new ordinance specifies and prescribes the locations in a building in which gas water heaters may be installed; defines vent manifold requirements, such as length of manifold, its slope and the length of the connection between the gas water heater and the vent manifold.

Specified also are the sizes of vents to the effect that the size of the common vent and the vent manifold shall not be less than the values set forth in a table contained in the ordinance, as above:

Number of Gas Water Heaters	*Maximum Gas Input Rating of all Gas Water Heaters*	*Minimum Internal Diameter of Vent and Vent Manifold*
2 or 3	75,000 B.T.U.	5 inch
4	100,000 B.T.U.	6 "
4	200,000 B.T.U.	7 "
4	300,000 B.T.U.	8 "

Gas water heater installations and repair and alteration jobs on existing installations in exceptional numbers took place during the six month period allowed contractors to clear their shelves of nonconforming units. The Plumbing Inspection Division of the Building and Safety Department, which has jurisdiction over gas water heater installations, disclosed that new heater installations averaged 1800 and alterations 500 per month since the "moratorium" on new requirements was instituted in February. There were issued in February 1812 permits for new gas water heater installations and 610 for repair jobs; in March 1872 and 528 respectively; in April 1775 and 510; and in May 2046 and 544.

The Building & Safety Department, through Stephen I. Smoot, co-chief of the Plumbing Inspection Division, also issued an order advising all firms dealing in the manufacture, repair, sale or installation of gas-fired water heaters in Los Angeles that no gas water heater may be removed, replaced or rebuilt without first obtaining a municipal permit for such work. A permit is not necessary, however, the department ruled, for repairing a gas water heater when such repair can be done without removing the heater. When it is found necessary to disconnect and remove the heater, or for any other reason, a permit must be obtained by a registered master plumber or a master gas fitter for the removal or reinstallation of the heater.

"Norton Folks Contribute To Industry"

Designed and produced for distribution among their employees to familiarize them with their Company's products, their applications in industry, and to stimulate employee relations, Norton Company of Worcester, Mass., has issued a comprehensive and colorful book illustrating and describing its achievements in the production of abrasives, grinding and lapping machines and refractories.

Its 72 pages (8½ x 11) are replete with illustrations of war and peacetime industries in field, factory and home. The application of the Company's products are set forth in a most informative way and with excellent taste. Its typography and display mark it as a fine example of the printer's art.

A limited number of copies are available through request on a business letterhead.

Lone Star Gas Co. Celebrates 35th Anniversary

The year 1944 marks the 35th anniversary of Lone Star Gas Company. The company was organized when the State of Texas granted it a charter on June 4, 1909. During these months, 35 years ago, the first pipe line of the company was being constructed from Petrolia to Fort Worth and Dallas. In the first year of its history the company had about 15,000 customers and during the first winter one well in the Petrolia field carried the entire load. Now, 35 years later, the company has grown to more than 5,000 miles of interconnected pipe line serving 275 towns and cities and more than 325,000 customers.

Dahlgren Acting Secy. of Oil Compact Comm'n.

E. R. Dahlgren has been appointed Acting Secretary of the Interstate Oil Compact Commission, Oklahoma City, Okla.

E. R. Dahlgren

Mr. Dahlgren succeeds Charles L. Orr, who resigned as Secretary of the Commission to become Secretary of the Independent Natural Gas Association of America.

THE STACEY MANUFACTURING CO.
Engineers Fabricators Constructors
• Gas Holders • Gas Plant Equipment • Steel Plate Construction •
GAS HOLDER INSPECTION SERVICE
Cincinnati — Ohio
93
STACEY SINCE 1851
Years

A. G. A. Activities

Approval Standards Extended to Cover High Altitudes

Initiating action toward adoption of approval standards for appliances operating at high altitudes, four requirements subcommittees met at the American Gas Association Testing Laboratories in Cleveland during the week of April 9. Meetings of the water heater, space heater, domestic gas range and central heating groups took place.

Proposed additions to present approval requirements for these various appliances to insure their satisfactory performance at altitudes up to 5200 feet were reviewed and adopted. These new provisions are being submitted to the entire industry for review and criticism. Their application will still further improve the service rendered by gas appliances to many customers living in high altitude areas.

Action of these groups brings to a head many years of study of performance of gas appliances at high elevations. It followed extensive tests by the Laboratories both at their Pacific Coast Branch and at Lake Arrowhead as well as at the National Bureau of Standards.

Under the requirements adopted, performance tests will be conducted under conditions simulating high altitude rather than by actual use of special high altitude chambers. While consideration was given to employing such chambers, numerous difficulties presented themselves in addition to the high initial cost. Under the proposed arrangement, equipment will be tested under sea level conditions at a specified increase above the high altitude rating desired by the manufacturer. It has been found entirely practical to duplicate performance at high altitudes by this procedure.

Furnace Noise Studied in New Research Bulletin

The first research bulletin to be published by the American Gas Association Testing Laboratories on Central Gas Space Heating Research has been issued as one of two new bulletins recently released to the gas industry. This project is now in progress under the supervision of the Committee on Domestic Gas Research.

Known as Research Bulletin No. 25 and entitled "A Study of Fundamentals of Resonant Noise In Gas Furnaces," the new publication presents a comprehensive analysis of the factors responsible for such noise. It also includes specific recommendations for elimination of noise in instances where it is encountered. This information is expected to be particularly useful both to designers of gas furnaces and those engaged in their servicing.

Research Bulletin No. 26, "Primary Air Injection Characteristics of Atmospheric Gas Burners," is another Laboratories publication just released. It sets forth a new empirical relationship for calculation of primary air entrainment from the dimensions of the burner, composition of the fuel gas employed and gas pressure. The treatise forms the sixth of a series of research publications which have gradually translated the technique of burner design, once largely "rule of thumb," into fundamental or empirical relationships. It reviews and correlates much of the material formerly presented in earlier publications.

These two new bulletins represent the fifteenth and sixteenth respectively of a series of research publications presenting results of a program of fundamental research for the further improvement of domestic gas appliances.

W. R. Teller Appointed Laboratories Assistant Director

William R. Teller, formerly Chief Research Engineer, has been appointed Assistant Director of the American Gas Association Testing Laboratories, according to an announcement made by R. M. Conner, Director. His promotion was made largely in recognition of Mr. Teller's outstanding activities in war work at the Cleveland Laboratories, Mr. Conner crediting him with being primarily responsible for their excellent record in design and development of special products for the Army and Navy.

Mr. Teller was graduated from Case School of Applied Science in 1927 with a degree in mechanical engineering. After three years of field experience in gas and oil production, he joined the Laboratories staff in Cleveland. His experience over the past 14 years has included testing, inspection, research, and more recently war development activities. Shortly after Pearl Harbor he was placed in charge of the newly-formed War Products Department. In addition to this responsibility he has for the past year directly supervised all Laboratories domestic gas research projects.

Industrial and Commercial Gas National Advertising To Be Expanded in New Association Year

H. Carl Wolf, Chairman of the Committee on National Advertising, and J. P. Leinroth, Chairman of the National Advertising Committee of the Industrial and Commercial Gas Section, have announced that the American Gas Association national advertising in trade, technical and business magazines will be substantially increased for the year beginning September 1, 1944. This increase will include several new industrial and commercial gas trade magazines, as well as a greater number of insertions in certain of the magazines that are being used this year.

In discussing the theme of the advertisements that will make up the enlarged program, Mr. Leinroth stated: "In all of our Industrial and Commercial Gas Advertising since the inauguration of the program, a conscious attempt has been made to fit it to the specific job to be done, and particularly to make it timely by tying it in to existing industrial and business conditions.

"Since the war began this has meant that Industrial and Commercial Gas Advertising has been closely related to our war production program and to food preparation for military and civilian personnel.

"As the panorama of the accomplishments of Gas and modern Gas equipment unfolded, it has become increasingly clear that (1) Gas equipment for heat-treating and for other essential operations—in the metals, ceramics, and other fields—has been distinguishing itself far more than most people realize, and (2) that all this new knowledge of the application of Gas will be of tremendous significance to Industry during the reconversion and postwar period. On that dual theme our most recent Industrial and Commercial Gas Advertising has been founded."

CRUSE-KEMPER COMPANY
AMBLER, PA.
We are working on War Equipment and supplying Essential and Emergency Requirements for the Gas Industry.
GAS HOLDERS, GAS HOLDER REPAIRS, PURIFIERS
COMPLETE GAS HOLDER INSPECTION SERVICE
41 YEARS OF SOUND
STEEL PLATE CONSTRUCTION

Willien, Associate Director, Institute of Gas Technology

Leon J. Willien, nationally known expert on gas, has been appointed associate director of thte Institute of Gas Technology at Illinois Institute of Technology, it has been revealed by John I. Yellott, director of the Gas Institute.

Willien has been associated with the Public Utility Engineering and Service Corporation, Chicago, as a gas engineer since 1937. At present he is also head consultant on manufactured gas for the War Production Board.

Recipient of the American Gas Association's two top awards, Willien received the Beal medal for the most valuable technical paper read before the association's technical section at the 1927 convention. The paper was on "Developments in Water Gas Operation." Nine years later, in 1936, he received the Charles A. Monroe Award from the association for his contributions to the manufacture, mixing and transmission of gas.

Willien has also been elected an honorary member for life of the Pacific Coast Gas Association, for making "the most valuable contribution in 1932 to the gas industry on the Pacific Coast." The contribution was the development of a process for the production of a high Btu manufactured gas with existing equipment. The gas can be used as a substitute for natural gas in the event of a failure of the natural supply, or can be mixed in any proportions to augment the natural gas supply at times of peak loads.

In his new position with the Gas Institute, Willien will have charge of research in gasification and related fields. Also, he will serve as consultant on water gas generation.

Home Service Supervisor of Peoples Natural Gas Co.

Announcement that Miss Ruth Miriam Severson, who has been Home Economist for the Iroquois Gas Company, Buffalo, N. Y., and the Kansas City (Mo.) Gas Company, has been engaged as Home Service Supervisor, has been made by Christy Payne, Jr., Sales Manager of the Peoples Natural Gas Company. Miss Severson succeeds Mrs. Lemabel Parry, who for more than a year has headed the Home Service Department of Peoples.

Miss Severson is in charge of the series of demonstrations and canning clinics which Peoples is carrying on through the month of August in the area serviced by the Company.

New Technical Bulletin on Duplex Tubing

Bridgeport Brass Company has published a new technical bulletin on the applications and installation of Duplex tubing.

Duplex tubing was developed to overcome corrosion problems too severe for a single metal or alloy, such as corrosive oils or vapors on one side, and polluted circulating water on the other. By treating such a condition as two separate corrosion problems, and selecting the material best for each, it is possible to combine two such materials into one tube. The method of manufacture produces a close mechanical contact between the two materials without seriously interfering with heat transfer properties.

Among the many important applications described are those dealing with coke by-product plants and the gas industry.

This tubing with various combinations of ferrous and non-ferrous materials has been in actual service in coke by-products plants for the past eight years. In the oil and natural gas industries, Duplex tubing with steel outside to resist corrosive oils or vapors is used with copper inside toward circulating fresh or salt water. Other applications in those industries use cupro nickel with red brass, and aluminum with copper or brass, either inside or out.

Duplex tubing with copper outside and steel inside can be used advantageously for conveying gas underground where corrosive soil conditions destroy steel prematurely.

Many different methods of installation are described and illustrated by cross section drawings. The problem of galvanic corrosion between the tube sheet and tubes is covered thoroughly, and corrective methods are described.

This Bulletin may be obtained free of charge by writing to Bridgeport Brass Company, Bridgeport 2, Conn.

Presentation ceremony July 13 when the Army-Navy "E" award was conferred on the Harper-Wyman Company of Chicago, manufacturers of the Harper-Burner System. Philip S. Harper, president, is third from left. Mrs. Harper also appears in the photograph.

Harper-Wyman Co. Wins Army-Navy "E" Award

The Army-Navy "E" award for excellence in production of war materials was presented to the Harper-Wyman Co. of Chicago in ceremonies July 13.

The award was made by Commander James Ward, U. S. Navy, with presentation of Army-Navy "E" pins to employees by Lt. Colonel F. E. Swanson, U. S. Army.

Philip S. Harper, president of the company, developed the Harper Burner System, beginning manufacturing operations in 1927. The Harper valve and burner was a new idea for top burner cooking, each burner being two burners in one—a large burner for quickly heating the contents of a vessel to the boiling point, and a small inner burner that could be used independently to keep the food boiling. The system is in wide use on better gas ranges today.

Although the Harper Burner system is the principal product of the company, a variety of valves, burners, automatic lighters, and stove fittings for domestic and commercial gas ranges are produced in peace time.

A noteworthy fact about the Harper-Wyman Company is its youthful organization. Most of the executives and department heads are barely over 30 years of age, yet the company under the guidance of Philip S. Harper has become a leading producer of several of the more difficult items required by the war.

While production at present is confined almost exclusively to war materials, research has continued with the goal of improving the gas range of the future. As a result of such research, the company is confident that new developments will more than ever convince housewives of America that gas is the ideal fuel for cooking.

J. C. Kellner Appointed to Sales Post of Servel

J. C. Kellner, formerly assistant manager of sales service at Servel, Inc., Evansville, Ind., has been appointed acting manager of the department, succeeding Prescott B. Wiske, who died of a heart attack June 5 in Denver, Colorado.

J. C. Kellner

Mr. Kellner joined the Servel organization in April, 1928. He is a native of Henderson, Ky., and a graduate of Purdue University.

Home Service Activities in New England

Mrs. Hazel Cheever of the Malden & Melrose Gas Light Company continues for the second year as chairman of the home service group in the New England Gas Association. With 52 home service departments through six adjoining states, it makes it convenient to carry on committee assignment with the background of similar programs to draw from. The program of work for 1944 has been approved by the Sales Section. The work through the departments will include cooperation with Government program of rationing, food production and preservation, as well as home calls, survey work, and radio programs. The tasks for the group will be as follows:

1. To set up a library or clearing office in the Boston Consolidated Gas Company for all home service material collected from all possible sources to be of assistance particularly to new girls coming into the field. Susan Mack of Boston, Dorothy Lowney of Taunton and Barbara Goodspeed of Hyde Park will work on this.

2. To investigate the possibilities of the inclusion in the curricula of local schools of home economics courses designed for training of home service personnel. Also to outline the details of a refresher course in home service work for home service women. This committee will include Lyda Flanders of Worcester, Arra Mixter of Hartford, Kathleen Atkinson of Providence, and Lillian Dunbar of Cambridge.

White Star Added to Estate's Army-Navy "E" Flag

The men and women employees of The Estate Stove Company, Hamilton, Ohio, were notified July 15th by Robert P. Patterson, Under Secretary of War, that they had received for the second time the Army-Navy production award for "meritorious services on the production front." The renewal award is in the form of a white star which is added to the Army-Navy "E" pennant previously awarded.

The renewal award now qualifies employees who have been added by Estate since the original presentation to wear the Army-Navy "E" lapel pin.

Clewell Becomes Heating Manager of Richmond Radiator Co.

Mr. H. L. Charlton, President of the Richmond Radiator Company, Uniontown, Pa., announces the appointment of Mr. Raymond L. Clewell as Manager of the Heating Division.

Raymond L. Clewell

Mr. Clewell, formerly manager of the Gas Division of the National Radiator Co., and manager of its Post War Planning Division, is well known to the heating trade and utility companies, and will continue to be active in trade association work.

Mr. Clewell will headquarter at the company's General Sales offices, 535 Fifth Ave., New York, N. Y.

Fisher Furnace Co. Acquires Monarch Eng. & Mfg. Co.

The industrial furnace business of the Monarch Engineering and Manufacturing Company of Baltimore, Maryland, has been purchased by the Fisher Furnace Company of Chicago. The transaction gives the Fisher Furnace Co. all rights to manufacture Monarch Equipment and includes all patterns, drawings and parts inventories.

Future plans provide for the continued manufacture of certain specialized Monarch Furnaces with improved design features, and the continuation of a complete parts service for Monarch Furnaces now in operation. All Monarch Furnaces to be carried over into the Fisher line will be subjected to a thorough revamp and modernization program by the Fisher Engineering Department at Chicago. Combined headquarters and manufacturing facilities will be located in the two existing Fisher plants in Chicago for the present.

The Fisher Furnace Company has engineered and manufactured a broad line of melting furnaces, blowers, refractories and allied equipment since 1906 and has, in recent years, pioneered much of the progress in melting nonferrous metals through its engineering and plant layout research.

Bristol Co. Appoints Branch Managers

The Bristol Co., Waterbury, Conn., announce the following appointments: H. C. Clarke has been appointed district manager of the Pittsburgh, Pa., branch office. Mr. Clarke was sales engineer in the Buffalo, N. Y., office.

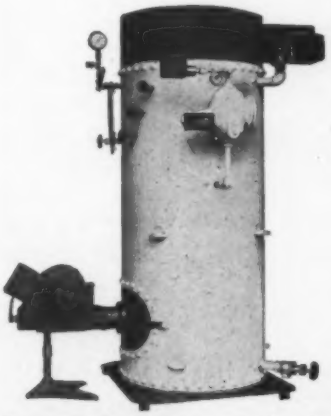
G. H. Gaites has been appointed regional sales supervisor of the Cleveland and Pittsburgh territories, with headquarters in the company's new branch office in Cleveland located in the Engineer's Building.

D. D. Ault will be in charge of a new branch office in Houston, Texas, in the Citizens State Bank Building. Mr. Ault will serve the states of Louisiana and Texas with the exception of the Panhandle section.

PRODUCTION ENGINEER

Wanted. Engineer, experienced in gas burning equipment for post-war program. Positon is permanent and with an old established manufacturer. Write Box 136, c/o American Gas Journal Inc., 53 Park Place, New York 7, N. Y.

LATTNER GAS — OIL BOILER 3 HP to 35 HP.



Burns natural gas or regular furnace oils with equal efficiency using same burner.

P. M. Lattner Mfg. Company Cedar Rapids, Iowa

Specialty Dealers To Push Better Grade Gas Ranges

Gas and electric specialty dealers, who sold 23% of the 2,300,000 gas ranges produced in 1941, will concentrate on higher grade gas ranges after the war according to Lloyd C. Ginn, CP Gas Range Chairman, Association of Gas Appliance and Equipment Manufacturers.

"Wartime experiences have proved to housewives that better ranges not only save food, time and fuel, but last longer and require less servicing expense. This is evidenced by field studies, and by the increasing number of inquiries about CP gas ranges being received from consumers and dealers alike.

"Our studies also indicate that more and more electric and gas specialty dealers are realizing the importance of informative grade labeling and of promoting nationally advertised quality products that have consumer acceptance as the best means of meeting competition in the postwar era."

If inquiries for the CP Gas Range Manufacturer's Programs are any indication, after the war, the same type of outlets will sell gas ranges in about the same proportion as they did in 1941, Mr. Ginn pointed out.

"Inquiries for the CP Business Building Plan Kit being received from various types of dealers, are almost in direct ratio to the total number of gas ranges sold by each type of dealer in 1941. For example: electric and gas specialty dealers sold 23% of all gas ranges sold in 1941, and almost exactly 23% of all requests for the CP Business Building Plan Kit are coming from electric and gas specialty dealers."

Southern Research Institute

With headquarters located at the office of Alabama State Chamber of Commerce in Montgomery, this institution will engage in technical research on a contract basis, and is patterned largely after Mellon Institute of Industrial Research.

The institute has at present about $400,000 for its implementation, all subscribed by business firms and individuals in the southern region; this foundation fund is expected before long to reach $1,000,000.

New Sales Head Elected by American Radiator

On July 27th, the Board of Directors of the American Radiator & Standard Sanitary Corporation, at a meeting held in New York, elected Donald D. Couch, Vice President and General Manager of Sales, effective immediately. Mr. Couch's headquarters are in the General Offices of the Corporation, Bessemer Building, Pittsburgh.

H. C. Jamerson Joins Servel Staff

John K. Knighton, sales manager of the gas air conditioning division, Servel Inc., Evansville, Ind., has announced the appointment of H. C. Jamerson to the staff of the Division.

Mr. Jamerson, who has been out of the air conditioning field for several years, was formerly sales manager of the Airtemp Division of Chrysler Corporation. He was also advertising aid sales promotion manager for the DeSoto Division of Chrysler.

His other connection with the refrigeration industry is with Frigidaire as sales manager in charge of product distribution. Mr. Jamerson is a native of St. Louis and a graduate of Harvard in the class of 1915.

In his new position with Servel in the duration period he will be in charge of the coordination of the gas air conditioning sales story and creating a salesmen training program for the new product.

W. J. Priestley Becomes Pres. Electro Metallurgical Co.

William J. Priestley has been elected president of Electro Metallurgical Company, Electro Metallurgical Company of Canada, Ltd., Michigan Northern Power Company, and Union Carbide Company of Canada, Ltd., units of Union Carbide and Carbon Corporation. He succeeds the late Francis P. Gormely.

In 1923 Mr. Pristley became consulting metallurgist for Electro Metallurgical Company. He became Vice-President in charge of Sales Development in 1932, and was chief of the Alloy Steel Division of the War Production Board during the period of organization for the expansion of alloy steel production in 1942.

Jones & Laughlin Announces Executive Changes

Jones & Laughlin Steel Corporation announces the following changes in its organization, effective July 27, 1944:

Lewis M. Parsons has resigned as a Director and a member of the Executive Committee, and as Vice President in Charge of Sales, of the Corporation.

Adam J. Hazlett, General Manager of Sales, has been elected Vice President in Charge of Sales of the Corporation.

John W. Reavis, a member of the law firm of Jones, Day, Cockley and Reavis, of Cleveland, has been elected a Director of the Corporation.

Carbonizing Properties of American Coals

The Bureau of Mines has published a report on the carbonizing (coking) properties of 20 coals from eight States, bringing to 86 the number tested by a method developed by the Bureau in cooperation with the American Gas Association.

The 20 coals discussed in the latest report are from Kentucky, Oklahoma, Arkansas, Kansas, Pennsylvania, West Virginia, North Dakota, and Wyoming. Both the proximate analysis (determination of moisture, volatile matter, and ash) and the ultimate analysis (determination of the ash and chemical elements present in the combustible portion) of the various coals are given.

Research in the carbonizing properties of Oklahoma coals at the request of the Reconstruction Finance Corporation led to the selection of suitable blends for coke used in new steel plants at Dangerfield and Houston, Tex. This phase of the research was conducted in cooperation with the Oklahoma Geological Survey, according to the authors of the publication, J. D. Davis, supervising chemist, and D. A. Reynolds, chemist, both of the Bureau's Coal Carbonization Section, Pittsburgh, Pa.

Also included in the Bureau's report are descriptions of the development of expansion, oxidation, and spontaneous combustion tests, use of high-volatile coals with low- and high-temperature coke char in connection with the development of suitable blends of Western coking coals, blend tests of Eastern coals with anthracite in coke making, and packing tests, or cake-charging experiments, with coal from the Lower Sunnyside bed of Utah.

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RANGE:
Cu. Ft. of Gas Per Hour—100-10,000 M
Diameter of Pipe—Inches ¾-30
Difference in Absolute Pressure—Lbs. per sq. in., 1-500
Sum of Absolute Pressures—Lbs. per sq. in., 2000-20
Specific Gravity—1.5-.35
Length of Pipe—Feet 100-5000
Length of Pipe—Miles 1-250

Low Pressure
RANGE:
Cu. Ft. of Gas Per Hour—10 to 500 M
Pipe Diameter—¾" to 48" (including standard and actual weight up to 4")
Pressure Loss—Inches .01-10
Length of Pipe—Feet 30-30,000
Specific Gravity—1.5-.35
Constants—1400-1000

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We have prepared a 15 page study of

Panhandle Eastern Pipe Line Co.

Common Stock

Under the "Mokan Plan" recently approved by stockholders, 163,710 shares of the above stock are being offered under rights to stockholders of

Missouri Kansas Pipe Line Company

Subsequently, upon liquidation of Mokan's secured debt, an additional 363,802 shares of Panhandle stock are to be offered in exchange to Mokan stockholders.

A copy of our analysis will be mailed upon request.

KIDDER, PEABODY & CO.
FOUNDED 1865
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INDUSTRIAL FURNACES
●
THE GAS MACHINERY CO.
16100 Waterloo Road
Cleveland 10, Ohio

Cycling in Louisiana

(Continued from page 34)

out into the formation. During this time the wells of the other operators have been shut in with no participation on their part. It is believed that the largest single factor at present retarding adoption of large scale cycling projects is the extreme difficulty met and long time taken in unitization and it is hoped other states will follow Louisiana's lead and provide statutory help and encouragement for unit operation.

The simplest method for determining equities is on the basis of acreage and is the one widely used in the past. Allocation on this basis is fair when there is only one sand which has the same thickness over the productive area. However, where there are several sands in the unit varying in thickness and in recoverable liquid content, an entirely different basis must be used. With a knowledge of subsurface conditions and reservoir content, the reserves in place can be calculated with reasonable accuracy and provide the most equitable basis for participation.

Engine Room at Omaha

(Continued from page 27)

turbine driven are regulated for speed and discharge pressure semi-automatically through a set of Askania regulators. It is possible to operate any two or all three compressors in parallel if the load demand becomes too great for a single machine. The other three compressors are of a lower capacity and are used during summer loads and at night when load demands are at a minimum.

The inside walls of the building are enameled white and have a light green dado extending from the floor to a five-foot height. All gas piping is white with valves on low pressure lines colored bright yellow and on high pressure lines orange. The steam piping is painted gray with all valves on the low pressure lines a maroon. The compressors are a light buff and the exhausters are painted a kelly green.

The Engineering and Construction staffs of the Metropolitan Utilities District designed and built this project from laying the foundation to the final coat of paint.

Book Review

The Analytical Chemistry of Industrial Poisons, Hazards and Solvents, by Morris B. Jacobs, Ph.D., Interscience Publishers, Inc., 215 Fourth Ave., New York, 3, N. Y. 661 pages, 5⅛" x 8". Price $7.00.

This is a book dealing with the chemical aspects of industrial hygiene. The vast expansion of the use of chemicals used both in industry and the home has made the study of these chemicals, and their effect on health, of great importance.

After describing the various types of hazards encountered, all of which are analyzed, the author emphasizes the importance of having an adequate sample of the material to be analyzed to avoid incorrect determinations resulting from improper sampling. Various types of sampling instruments are described and illustrated.

There are chapters devoted to Measurement of Gas Volumes and Quantity, the Chemical and Microscopic Estimate of Dust, Dangerous and Harmful Metals, and chapters devoted to various fluids, and chemical compounds.

This book has a sixteen page appendix which includes many tables and charts and a complete author's index.

HILMAR PAPST

Hilmar Papst, nationally known engineer and vice-president of Portland Gas & Coke Company, Portland, Oregon, died unexpectedly June 22.

Hilmar Papst

Mr. Papst was born in Germany May 31, 1873. After completing college there he came to this country in 1892, entering the gas business in 1893 as a cadet engineer in the employ of the United Gas Improvement Company of Philadelphia. In order to learn the gas business from the ground up, he worked as a gas maker's helper at Manchester, N. H., one of its subsidiaries. After a year's work in this station he visited other of their properties to study manufacture and construction.

This training later on gave him the position of erecting engineer and expert in the manufacture of gas. In this position he operated, supervised and erected numerous plants in the East, Middle West and the Pacific Coast.

In 1900 he resigned and took charge of the Equitable Gas Light Company in San Francisco and later when the various gas companies there united he was selected as chief operating man and engineer. On May 1, 1906, he was asked to take charge of the local company as general manager. Since 1910 he had been its vice-president.

He is credited with developing manufacture of the many by-products that has made the Portland concern one of the outstanding plants in the nation.

He was general manager of the Portland Gas Light Company from 1906 to 1910; vice-president and general manager of the Portland Gas & Coke Company, 1910 to 1938, when he retired from active management. He remained in advisory capacity as vice-president. He was responsible for converting the old plant into petroleum manufacture instead of coal gas.

EDGAR HIEL BRISTOL

Mr. Edgar H. Bristol, President of The Foxboro Company, Foxboro, Mass., and one of its founders, died unexpectedly of a heart attack, on July 24, at his summer home at Falmouth Heights, Mass.

Mr. Bristol was born in Naugatuck, Conn., March 7, 1871. He had unusual mechanical skill, and after completing his high school education he found employment as a machinist, later becoming a tool-maker and subsequently production manager of the instrument company of which his father was president. With his brother, Bennet B. Bristol, he withdrew in 1908 to organize the Industrial Instrument Company which, on January 1, 1914, became The Foxboro Company. Mr. Bristol maintained an active participation in the company's affairs, serving as its president throughout its history. He was also the president of the Foxboro National Bank.

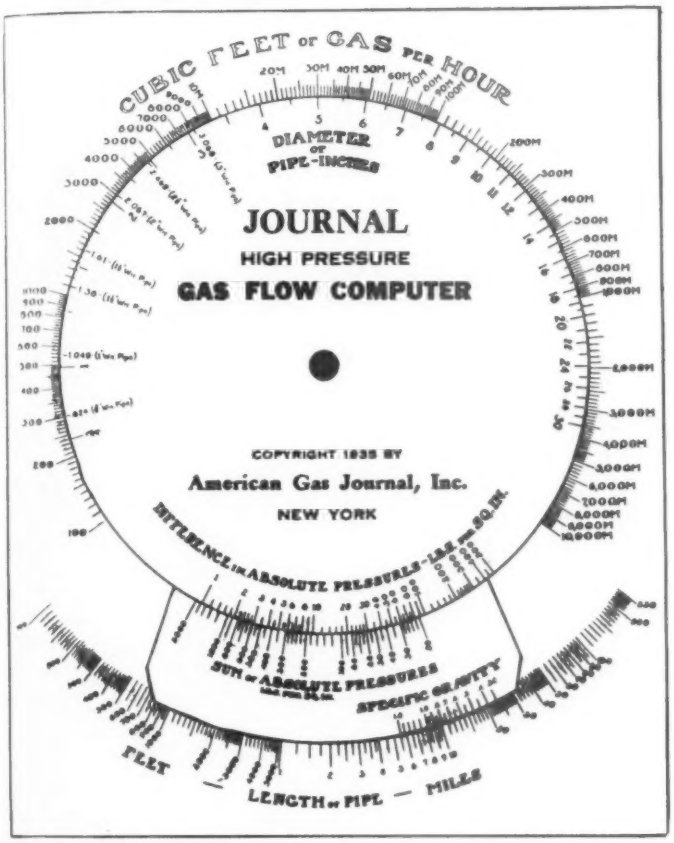
More than forty patents were recorded to his credit, some of them so basic in character as to establish new principles of instrument design and operation. The helical spring, which is the measuring element in temperature and pressure recorders, is an example of his inventive genius.

LAURENCE H. PARKHURST

Laurence H. Parkhurst, vice-president and director of the American Power & Light Company of 2 Rector Street, New York, died suddenly on July 28th. He was sixty-seven years old and was graduated from Harvard College in 1898.

Until 1935 he was a vice-president and director of the Electric Bond & Share Company, a corporation with which he had been for eighteen years. Before that he was with the Old Colony Trust Company in Boston.

"Journal" Gas Flow Computers



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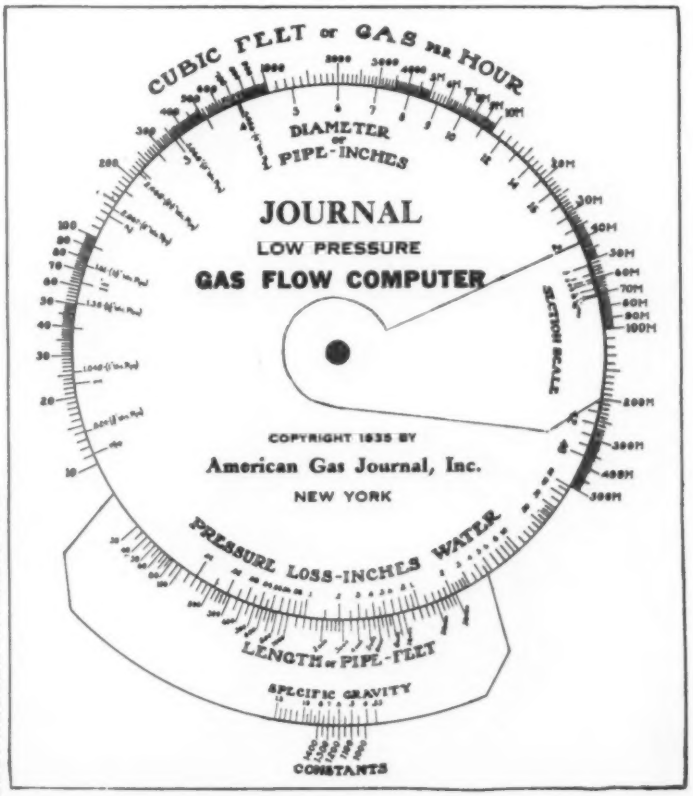

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